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THE INSECT PEST SURVEY
BULLETIN

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UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

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INSECT PEST SURVEY BULLETIN

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THE MORE IMPORTANT RECORDS FOR FEBRUARY

The winter over the greater part of the country has not, apparently, affected insects severely and, unless conditions early in the spring are unfavorable, most insects will come through in good condition. In Florida the dry weather during the fall checked fungus growth, permitting scale insects to build up greater populations.

A general infestation of greenbug was reported during the latter part of February in the South Atlantic and Gulf States and damage is already being reported from several areas.

In the extreme South the usual cutworm infestations are starting to attract attention.

The European earwig in Salt Lake County, Utah, has built up populations and is now becoming annoying around homes.

Chinch bug has survived thus far with rather low mortality; however, the critical months are still to come.

The vegetable weevil has been reported as damaging truck crops from South Carolina to Florida and around the Gulf to Texas, damage being particularly severe in cruciferous crops.

Flights of moths of the green clover worm were reported from Mississippi and Louisiana.

The screwworm has increased in population and extent of infested area in the Southwest.

GENERAL FEEDERS

CUTWORMS (Phalaenidae)

Mississippi. C. Lyle (February 21): Specimens of the clay-backed cutworm (Feltia gladiaria Morr.) were received from Hancock County, where they were feeding on vegetables in December. Specimens of the granulate cutworm (F. annexa Treit.) were received from three properties in Jackson and Hancock Counties in December, where they were feeding on turnip and other vegetables. Specimens of the black cutworm (Agrotis ypsilon Rott.) were received from Jackson County in December with the report that turnips were being destroyed.

Nebraska. H. D. Tate (February 19): Specimens of army cutworm (Chorizagrotis auxiliaris Grote) submitted from Hitchcock County. Large numbers of caterpillars observed migrating along roadside.

BEET ARMYWORM (Laphygma exigua Hbn.)

Arizona. L. L. Stitt (January 15): Larvae found on alfalfa and Sisymbrium irio on January 15 at Yuma.

WIREWORMS (Elateridae)

Louisiana. E. K. Bynum (February 10): Specimens collected near Edgard in the southern part of the State. Reported as doing considerable damage to sugarcane and other field crops. (Det. by W. H. Anderson.)

California. M. W. Stone (January 31): Male and female adults of the sugar-beet wireworm (Limonius californicus Mann.) began to emerge from cages at Ventura on January 31, 1 week earlier than in 1940.

EUROPEAN EARWIG (Forficula auricularia L.)

Utah. G. F. Knowlton (January 6): Reported as annoying in and around homes in the Holladay-Cottonwood-Granite area of Salt Lake County.

California. H. J. Ryan (February 18): Intercepted in two shipments of ornamentals originating in Eureka, Humboldt County, and San Jose, Santa Clara County, shipped to Tarzana and Los Angeles, in Los Angeles County.

RING-LEGGED EARWIG (Euborellia annulipes Lucas)

Mississippi. C. Lyle (February 21): Reported as injuring stored Irish potatoes in Lincoln County in October.

SAY'S STINKBUG (Chlorochroa sayi Stal)

Arizona. E. E. Russell (January 10): Overwintered adults swept freely during December and up to the present from alfalfa and from mixtures of alfalfa and small grain in open fields in the Salt River and Buckeye Valleys, in south-central Arizona. One female found in the Buckeye Valley on January 8 contained practically fully developed eggs. Second winter in succession

that members of this species have been swept from open field crops during January.

A COREID (Leptoglossus occidentalis Heid.)

Utah. G. F. Knowlton (December 31): Specimens picked up in offices and laboratories at the College at Logan, causing annoyance to humans.

ANTS (Formicidae)

Texas. R. K. Fletcher (January 20): Pogonomyrmex barbatus F. Smith found in Jefferson County today. (February 2): Atta texana Buckley found in Harris County today. (February 21): Ants were killing trees, shrubs, and small plants in Harris County on February 1.

A MITE (Tetranychus sp.)

Mississippi. C. Lyle (February 21): Specimens of beans, sweet peas, azalea, and camellia plants infested with red spider mites were received from Harrison County in November and January, from Sunflower County in October, and from Washington County in December. Reports of injury to arborvitae were also received from Covington County in December.

C E R E A L A N D F O R A G E - C R O P I N S E C T S

WHEAT AND OTHER GRAINS

GREEN BUG (Toxoptera graminum Rond.)

Virginia. S. B. Fenne (February 17): General infestation of aphids on wheat, barley, and small grains.

South Carolina. J. G. Watts (February 24): Aphid damage common in Barnwell County section, appreciable damage having been done in occasional oat fields.

Georgia. O. I. Snapp (January 20): Abundant on oats at Fort Valley in the central part of the State. (February 21): Still abundant on oats and wheat at Fort Valley.

T. L. Bissell (February 20): Mild outbreak on oats this winter. Reported from Taylor County on January 9 and 15; from Spalding County on January 31; and from Pike County on February 7. Estimated loss on one farm on January 31 was 10 percent. The parasite Lysiphlebus testaceipes Cress. has been at work since January 9, when it was reported for the first time.

P. M. Gilmer (January 29): Reported on January 27 as seriously attacking winter oats throughout the State. Infestation rather heavy in vicinity of Tifton and in several other counties of southern Georgia. Some fields observed in which all of the plants have been killed over areas as large as half an acre. (February 11): Observations at Adel indicate that heavy infestations are rapidly disappearing. Very little indication of parasitization noted.

Mississippi. C. Lyle (February 21): Infested specimens of oats received from Lowndes County in November and from Newton County in January. About 200 acres were infested in each case with about half the acreage a complete loss. Barren spots in Lowndes County were replanted but were quickly destroyed by the aphids. Serious damage to oats reported in Scott County in December.

HESSIAN FLY (Phytophaga destructor Say)

Virginia. S. B. Fenne (February 17): Fifty percent of the wheat plants in one field in Wythe County were killed along the edge. Damage was moderate in another field.

Missouri. L. Haseman (February 22): Rather heavy infestations built up in scattered fields of wheat, particularly throughout the Missouri River Valley; also in scattered fields elsewhere throughout western and north-western Missouri, where fall rains permitted prompt germination of wheat.

CHINCH BUG (Blissus leucopterus Say)

Indiana. C. Benton (February 25): Examination made of eight samples of bunchgrass (Andropogon spp.) collected in 4 different places in Tippecanoe, Benton, and Warren Counties showed an average mortality of 16.8 percent, based on a total of 1,338 live and 270 dead bugs recovered from the samples.

Illinois. W. P. Flint (February 20): As the weather has been very mild, the few examinations made thus far indicate little mortality of hibernating insects.

Nebraska. H. D. Tate (February 24): Frequent periods of comparatively low temperatures, alternating with "thawing temperatures" and accompanied by an abundance of moisture, probably is causing considerable mortality in eastern Nebraska.

ALFALFA

ALFALFA WEEVIL (Hypera postica Gyll.)

Utah. F. V. Lieberman (February 24): Incidental observations of abundance in winter sampling for alfalfa-seed insects indicated economic damage to first-crop hay in the Delta area of Millard County, in the central part of the State.

California. A. E. Michelbacher (February 27): In the most heavily infested area of the San Joaquin Valley on January 3, I found that 2.6 percent of the alfalfa stems contained eggs of the alfalfa weevil. In the same field on January 28 I found but 1-percent of the stems infested; however, nearly all the developing buds contained very young larvae. They were feeding within the terminal buds and for that reason they could not be picked up by sweeping. The number of larvae collected per 100 sweeps of an insect

net in different fields ranged from 0 to 400. The latter figure would have been much greater had it been possible to dislodge the very small larvae. Adults of Bathyplectes curculionis Thoms. were making their appearance and based on rearing the parasite from last-stage weevil larvae, it was found that 5 percent of the larvae were parasitized. On February 13 the larval count ranged from 0 to 600 and the adult count from 0 to 130. Parasitization by B. curculionis had increased to 20 percent. Only 1 survey has been conducted in the area adjacent to the San Francisco Bay. On January 29 the number of alfalfa weevil larvae collected per 100 sweeps ranged from 0 to 9. Only 1 adult weevil was taken.

A WEEVIL (Hypera brunneipennis Boh.)

Arizona. W. C. McDuffie (February 28): Regular observations in the infested area of Yuma Valley, throughout January and February have shown a steady increase in abundance of H. brunneipennis larvae on alfalfa, bur-clover and sourclover. On the whole, larval survival has been comparatively high, owing to the absence of freezing night temperatures, and larvae have attained greater abundance and development has progressed somewhat more normally than in 1940. By the latter part of February considerable injury was being done to two fields of bur-clover, numerous patches of volunteer sourclover, and one thin stand of alfalfa situated in a citrus grove. Very little damage to other alfalfa is anticipated this season, however, since virtually all fields contain subinjurious populations.

ALFALFA CATERPILLAR (Colias eurytheme (Bdv.))

California. A. E. Michelbacher (February 27): Larvae of the alfalfa butterfly have been found all season. In the San Joaquin Valley the number collected per 100 sweeps has ranged from 0 to 12. Some parasitization by Apanteles flaviconchae Riley has been noted. In the area adjacent to the San Francisco Bay the number collected per 100 sweeps ranged from 1 to 22. Some of these were also parasitized by A. flaviconchae.

PLANT BUGS (Lygus spp.)

Utah. F. V. Lieberman (February 24): Very little reduced by winter weather in the Delta tract of Millard County, central part of the State. Active, though not flying, in alfalfa fields during mid-February.

Arizona. L. L. Stitt (January 13): Nymphs in second to fourth instars of the first generation for 1941 were found on January 13 on optimum growth of Chenopodium murale at different locations in the Salt River Valley.

CLOVER

GREEN CLOVER WORM (Plathypena scabra F.)

Mississippi. C. Lyle (February 21): Adults received from Jones County in January. Swarming by hundreds at dusk in the vicinity of State College about January 20.

Louisiana. R. C. Gaines (January): Adults were very abundant in buildings at Tallulah during the latter part of January. (Det. by J. F. G. Clarke.)

GARDEN SLUG (Agriolimax agrestis L.)

Oregon. B. G. Thompson (November 1): Very serious on crimson clover and hair vetch, several thousand acres having been attacked in the lower Willamette Valley. Several fields entirely destroyed. (February 24): Between 15,000 and 20,000 acres of hairy vetch and crimson clover damaged in the Willamette Valley. Damage done during November, December, and January. Still causing damage but at this time it is more serious on red and alsike clover planted in February.

SUGARCANE

SUGARCANE BORER (Diatraea saccharalis F.)

Louisiana. A. L. Dugas (February 22): Extremely light infestation, owing to weather conditions; perhaps the lightest injury of this century.

SUGARCANE ROOTSTOCK WEBVIL (Anacetrinus subnudus Buch.)

Louisiana. A. L. Dugas (February 22): Quite active at present time. All stages are being found in the field, but adults appear to be more numerous.

F R U I T I N S E C T S

EASTERN TENT CATERPILLAR (Malacosoma americana F.)

Mississippi. C. Lyle (February 21): Egg masses on twigs received from Lee County in January.

LEAF CRUMPLER (Mineola indigenella Zell.)

Texas. W. S. McGregor (February 11): Collected in Harris County, where there was a heavy infestation on plum.

SAN JOSE SCALE (Aspidiotus perniciosus Const.)

Michigan. R. Hutson (February 20): Of no commercial importance anywhere in the State.

Illinois. W. P. Flint (February 20): Survey carried on in southern part of the State showed a considerable increase in the number of moderate to heavy infestations in apple and peach orchards.

Georgia. O. I. Snapp, (February 21): Infestation at Fort Valley is heavier than that of an average year.

Alabama. J. M. Robinson (January 26): Observed infesting peach trees at Montgomery.

Mississippi. C. Lyle (February 21): Specimens on cherry and a shrub were received from Bolivar and Harrison Counties in October and December.

Missouri. L. Haseman (February 22): Practically no complaints from fruit growers indicating any tendency toward a build-up in commercial orchards.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Mississippi. C. Lyle (February 21): Adults collected on peach in Madison County in October.

Texas. R. K. Fletcher (January 25): Collected in Irion County on peach.

FLOWER THRIPS (Frankliniella spp.)

Florida. J. R. Watson (February 26): F. cephalica Crawf. unusually scarce since the freeze of mid-November killed most flowers.

California. S. F. Bailey (February 26): F. moultoni Hood rather scarce this spring in northern California, owing to weather conditions. Normally rather large numbers are found on the cover crops in orchards. Infestation usually moves up into the trees, especially plums, peaches, and nectarines in full bloom, causing fruit scarring.

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

Missouri. L. Haseman (February 22): Larvae surviving winter with very little mortality, owing to very favorable weather.

FRUIT TREE LEAFROLLER (Cacoecia argyrospila Walk.)

Illinois. W. P. Flint (February 20): Eggs present in about the same numbers in the heaviest infested areas in western Illinois as in 1940. Somewhat heavier infestation in Adams and Pike Counties, with moderate infestation extending at least as far north as Galesburg. Examination of overwintered eggs has failed to show presence of parasites; nearly all eggs in good condition.

Missouri. L. Haseman (February 22): About same number of overwintered egg packets on fruit, forest, and shade trees as last year in the arch extending from St. Louis west to the middle of the State, along the Missouri River, and a rapid dropping off of egg-packet abundance from Boonville, west.

CHERRY SCALE (Aspidiotus forbesi Johns.)

Delaware. J. M. Anos (February 4): Occurred on apples in several Delaware orchards last season. (Det. by H. Morrison.)

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Michigan. R. Hutson (February 20): Winter surveys indicated widespread and heavy accumulations on practically all orchard fruits.

Oregon. J. Schuh (February 20): Eggs abundant on many nursery plants at Portland.

A SPIDER (Tetranychus sp.)

West Virginia. G. H. Geissler (January 25): Early last fall tremendous numbers of a red spider were found beneath bark of trees in an orchard at Paw Paw, causing the foliage to suddenly become bronzed and discolored, severely impairing the finish of fruit at harvest time. Now found hibernating in clusters beneath the bark on the trunk and main scaffold-limb. (Det. E. A. McGregor.)

PEACH

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia. O. I. Shapp (February 19): Unusually heavy oviposition is anticipated early in the 1941 season as the overwintered females did not deposit any eggs in peaches in 1940. No appearance of adults from hibernation to date.

A BORER (Oberea tripunctata Swed.)

Texas. W. S. McGregor (January 10): Collected in Grimes County in peach twigs.

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck.)

Mississippi. C. Lyle (February 21): Injured peach twigs received from Attala, Leake, and Rankin Counties, and quince twigs from Adams County.

PEACH TWIG BORER (Anarsia lineatella Zell.)

California. S. F. Bailey (February 26): Parasite activity on the peach twig borer has continued during the winter in the hibernacula. The grain mite (Pediculoides ventricosus Newp.) parasitic hymenoptera, and predaceous beetle larvae have all been active in reducing the overwintering population. The overwintering larvae of the twig borer are now beginning to emerge on almonds, somewhat earlier than usual.

PEACH BORER (Conopia exitiosa Say)

Mississippi. C. Lyle (February 21): Reported as injuring peach trees in Covington, Lamar, and Warren Counties.

PEAR

PEAR THRIPS (Taeniothrips inconsequens Uzel)

California. S. F. Bailey (February 26): Now emerging. Light infestation, owing to weather conditions.

PECAN

A BORER (Conopia scitula Harr.)

Mississippi. C. Lyle (February 21): Larvae that probably belong to this species were sent in from Neshoba County, where they were feeding on pecan in January.

OBSURE SCALE (Chrysomphalus obscurus Comst.)

Georgia. T. L. Bissell (February 20): Pecan trees in an orchard at Meansville reported as heavily infested on January 27. Found only in occasional orchards.

Mississippi. C. Lyle (February 21): Infested pecan twigs received from Lauderdale County in February.

FILBERT

FILBERT BUD MITE (Eriophyes avellanae Nal.)

Oregon. B. G. Thompson (February 24): Unusually severe in one variety of filberts in the Willamette Valley. Leaf buds become distorted and die. Distorted buds first noticed about February 5.

CITRUS

SCALE INSECTS (Coccidae).

Florida. J. R. Watson (February 26): Unusual fall weather conditions checked fungus growth, allowing a marked increase of the Florida red scale (Chrysomphalus aonidium L.), the dictyospermum scale (Chrysomphalus dictyospermi Morg.), and the purple scale (Lepidosaphes beckii Newm.). An unusually heavy infestation of the snow scale (Chionaspis citri Comst.) observed on mulberries and persimmons. Killed some Japanese persimmons in Alachua County.

GREEN CITRUS APHID (Aphis spiraeicola Patch)

Florida. J. R. Watson (February 26): Very scarce owing to unusual weather.

CITRUS RED MITE (Paratetranychus citri McG.)

Louisiana. I. J. Becnel (February 22): Especially abundant on leaves and tender branches of citrus in the extreme southern part of Plaquemines Parish.

RED SPIDERS (Tetranychus spp.)

California. R. S. Woglum (February): Continues active over a wide area, both coastal and interior, owing to mild weather. Eggs are very abundant at present in Los Angeles County and in many cases active spiders are numerous on the fruit, especially inside fruit, the undersides of leaves, and the wood.

CITRUS RUST MITE (Phyllocoptes oleivorus Ashm.)

Louisiana. I. J. Becnel (February 22): Fruit on untreated Valencia trees seriously damaged.

AVOCADO

PYRIFORM SCALE (Protopulvinaria pyriformis Ckll.)

Florida. H. H. Flournoy (November 4): Specimens of insects and leaf from avocado tree submitted from Miami.

T R U C K - C R O P I N S E C T S

VEGETABLE WEEVIL (Listroderes obliquus Klug)

South Carolina. W. J. Reid, Jr. (February 13): What are apparently larval specimens of the vegetable weevil reported as injuring a spring-crop planting of cabbage at Charleston. First report received by writer since February 1937.

Florida. F. S. Chamberlin (February 10): Abundant in Gadsden County.

Mississippi. C. Lyle (February 21): Larvae and adults received from Marion County in December, from Jefferson County in January, and from Kemper County in February.

Louisiana. C. E. Smith and P. K. Harrison (January 17): Reported as causing considerable damage to untreated turnip and mustard plantings, and less damage to other hosts at Baton Rouge. (February 12): Heavy damage to untreated plantings of turnip and mustard, also to some untreated plantings of cabbage.

I. J. Becnel (February 22): Unusually abundant on carrots, mustard, and turnips in Plaquemines Parish.

Texas. W. S. McGregor (February 21): Severe outbreak at College Station, Brazos County, in January, on cabbage and turnip greens. Severe damage to leaves and roots of turnip. Reported as causing severe damage to tender greens in Burleson and Robinson Counties in February.

CUCUMBER BEETLES (Diabrotica spp.)

Georgia. T. L. Bissell (February 20): Two live specimens of Diabrotica duodecimpunctata F. collected at Newnan from dead grass.

Florida. M. D. Leonard (February 27): D. balteata Lec. and D. duodecimpunctata commonly observed on bean and tomato plants in a number of fields examined, but apparently doing little or no damage.

Louisiana. C. O. Eddy (February 22): Spotted cucumber beetle (D. duodecim-punctata) and banded cucumber beetle (D. balteata) active on warm days. Adults of western 12-spotted cucumber beetle (D. soror Lec.) observed flying in the Willamette Valley from February 16 to 22, normal condition for any warm day this time of year.

FLEA BEETLES (Halticinae)

Florida. M. D. Leonard (February 27): Leaves of purple-top turnips nearly ready to harvest, in the Homestead area, considerably riddled by a very small black flea beetle with yellowish stripes.

Mississippi. C. Lyle (February 21): Specimens of Phyllotreta vittata descedens Weise received from Issaquena County in November and from Hancock County in December. Plants injured were turnips, rape, and other vegetables.

Louisiana. P. K. Harrison (February 12): Striped flea beetle (P. vittata F.) attacking turnip and mustard at Baton Rouge. Damage light.

A. L. Dugas (February 22): Severe winter of last year seemed to have little effect on the striped flea beetle, P. vittata descedens, as they have been very numerous on turnips, radish, and mustard throughout the fall and winter.

SEED CORN MAGGOT (Hylemya cilicrura Rond.)

Florida. J. R. Watson (February 26): Many complaints received for the last 2 months. First appeared in lupines planted as a cover crop from Gainesville north, but recently complaints have come from the Bradenton section, where it is attacking cucumbers and beans which are just sprouting.

STRAWBERRY FRUITWORM (Cnephasia longana Haw.)

Oregon. R. Rosenstiel (February 24): Drifting from hibernation quarters in the Willamette Valley from February 16 to 22.

A LEAFHOPPER (Oncometopia costalis F.)

Georgia. T. L. Bissell (February 20): Five live specimens collected from dead grass at Newnan in 10 minutes.

A LYGAEID (Orthaea longulus Dall.)

Georgia. T. L. Bissell (February 20): One live specimen collected from dead grass at Newnan.

POTATO

POTATO APHID (Macrosiphum solanifolii Ashm.)

Florida. M. D. Leonard (February 27): Observations in many potato fields in the South-Miami to Homestead section (about 7,000 acres) during the past week showed a moderate general infestation. On tomatoes (a considerably larger acreage) it is reported that infestation occurred earlier this season than usual--starting, I believe, in January--but was greatly reduced by unseasoned rains about 2 or 3 weeks ago. Infestation increasing generally last week, with moderate to fairly heavily infested fields in some sections. Ladybird beetles, including Ceratomegilla fuscilabris Muls. and Cycloneda sanguinea L., fairly common on infested plants.

BEANS

POTATO LEAFHOPPER (Empoasca fabae Harr.)

Florida. M. D. Leonard (February 27): Reported that in the big bean section along the East Shore of Lake Okeechobee a considerable infestation had developed for a couple of weeks just prior to heavy rains, which occurred around the tenth. General light to moderately heavy infestation in a number of beanfields, in the South-Miami-to-Homestead area, although the latter type of infestation was observed by me personally only in a large planting of pole linas which have grown over head-high.

BEAN APHID (Aphis rumicis L.)

Florida. M. D. Leonard (February 27): Several large bean plantings observed in the Homestead-Redlands section, with light to moderate infestations during the last week. I understand that a number of plantings were infested more or less prior to recent heavy rains, which greatly reduced the infestation. In several of the latter plantings nearly all of the aphids had been killed by fungi.

PEAS

PEA APHID (Macrosiphum pisi Kltb.)

Georgia. P. M. Gilmer (February 11): Heavy aphid infestation reported on Austrian field peas at Adel. (Tentatively identified.)

Louisiana. C. O. Eddy (February 22): The pea aphid is rare.

Oregon. K. Gray (February 24): More abundant than usual on fall-sown legumes in the Willamette Valley, owing to ideal weather conditions.

CABBAGE

IMPORTED CABBAGE WORM (Pieris rapae L.)

Louisiana. C. E. Smith et al. (January 17): Damage to untreated Brassicae crops was severe at Baton Rouge. Population is gradually increasing.

CABBAGE LOOPER (Autographa brassicae Riley)

Louisiana. C. E. Smith et al. (January 17): Damage to untreated Brassicae crops severe at Baton Rouge. More abundant than usual at this season.

DIAMONDBACK MOTH (Plutella maculipennis Curt.)

Utah. G. F. Knowlton (January 28): Larvae damaged broccoli in experimental greenhouse at Logan.

HARLEQUIN BUG (Murgantia histrionica Hahn)

Mississippi. C. Lyle (February 21): Reported as injuring collards in Jasper County in November.

Louisiana. P. K. Harrison (February 21): One adult and one batch of eggs observed on collard on February 12 and February 19. No damage.

Texas. R. K. Fletcher (February 21): Collected in Zavalla County on February 16. Caused injury to greens all winter.

CABBAGE APHID (Brevicoryne brassicae L.)

Mississippi. C. Lyle (February 21): Specimens received from Webster County in January. Reported as destroying collards.

AN APHID (Penphigus lactucae Fitch)

Texas. R. K. Fletcher (February 4): Aphids collected on cabbage roots at Carrizo Springs, Tex., on January 7. Causing considerable damage. (Det. by P. W. Mason.)

TURNIP APHID (Rhopalosiphum pseudobrassicae Davis)

Louisiana. P. K. Harrison (February 12): Untreated plantings of turnip and mustard severely damaged at Baton Rouge.

CARROT

CARROT RUST FLY (Psila rosae F.)

Pennsylvania. L. E. Dills (February 3): Specimens of maggots in injured carrot obtained from a garden in Reynoldsville, Jefferson County, in November 1940. No records obtained in this section of the State previously. Almost negligible in western part of Pennsylvania during last 10 years. (February 10): Infested carrot sent in from Mill Village, Erie County.

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis Boh.)

Georgia. T. L. Bissell (February 20): Eleven live weevils found in cotton seed in December 1940, and January 1941, at the Experiment Station. Each one was inside a seed, which had been hollowed out and the contents consumed by the grub. Larval skin found in several seeds. A twelfth seed contained a parasite cocoon. Seeds seemed to have developed to normal size and were covered with a normal amount of lint, indicating that the seed must have been well grown when it was attacked by the weevil grub. Found in cotton seed rather commonly, even from bolls selected for good growth.

Florida. C. S. Rude (February 1): Total of 18 active boll weevils observed in the hibernation cages at McIntosh during week ended February 1. One live weevil was observed in the cages at Fruitland Park late last week. (February 13): Eleven active weevils observed in the hibernation cages at McIntosh on February 13.

PINK BOLLWORM (Pectinophora gossypiella Saund.)

Texas. A. J. Chapman (January 18): Very light overwintering population found in the surface debris collected from representative fields in Presidio County. Population in the individual fields ranged from 0 to 3 larvae per square yard, the 17 fields averaging 0.46 larva per square yard. (January 25): Ten square yards of surface trash was collected from each of 27 representative fields in the Presidio Valley, selected to determine the number of larvae overwintering in this environment. Average number of larvae per square yard in the individual fields ranged from 0 to 3.0, the 27 fields averaging 0.33. Examination showed that approximately 16 percent of the worms were in bolls and locks of cotton, and 84 percent in leaf trash and squares.

FOREST AND SHADE - TREE INSECTS

CANKERWORMS (Geometridae)

New York. E. P. Felt (February 20): Moths, probably Alsophila pometaria Harr., reported as locally abundant in Westbury, Long Island, and vicinity.

Illinois. W. P. Flint (February 20): Examinations made late in fall showed overwintered pupae in soil in good condition, with little indication of parasitization.

Missouri. L. Haseman (February 22): Male moths seen on wing for first time on February 11 in southwest Missouri. Few male moths observed on February 12 between Kansas City and St. Joseph. Reported that first moth was taken on bands at Columbia on February 16.

A LOOPER (Ellopia athasaris Walk.)

Connecticut. J. V. Schaffner, Jr. (February 24): Records indicate that moths will emerge at comparatively low temperatures. On October 22, 1940, a collection of 118 pupae gathered from the duff beneath defoliated hemlock trees at Woodbridge was stored in some of the duff in cages in a cool basement room in the laboratory at New Haven. During January and up to date the temperature ranged from about 42° to 55° F. Moths began emerge in the fourth week of December and have continued to date. Thus far 48 moths and 2 hymenopterous parasites have emerged.

RUSTY TUSsock MoTH (Notolophus antiqua L.)

Vermont. C. H. Blasberg (January 30): Eggs received from Burlington. (Det. by C. Heinrich.)

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

Ohio. E. W. Mendenhall (February 25): Quite numerous on elms, other deciduous trees, fruit trees, evergreens, and shrubbery, and seem to have overwintered in good condition. No doubt some of the bags will be destroyed by parasites, but there will be enough left to increase the infestation, which at present covers the southern half of the State.

Texas. R. K. Fletcher (January 24): Collected on Arizona cypress in Tarrant County on January 24.

A BORER (Xylotrechus quadrimaculatus Hald.)

New York. E. P. Felt (February 20): Four-spotted wood-runner work in birch received from Purchase early in November. A gallery had been run around a 2½-inch stem and about ½ inch below the surface, causing the breaking of the stem at the point of injury. Causes same type of damage to medium-sized beech limbs.

AMBROSIA BEETLES (Platypus spp.)

Mississippi. C. Lyle (February 21): Specimens of P. compositus Say were taken on oak in Jackson County and of P. flavicornis F. from pine in Oktibbeha County in October.

ASH

CARPENTER WORM (Prionoxystus robiniae Peck)

Nebraska. H. D. Tate (February 24): Specimen of insect larva found boring in an ash tree received from Holt County on February 5.

BEECH BLIGHT APID (Prociophilus imbricator Fitch)

C. Lyle (February 21): Adults and young that probably belong to this species were taken from a beech tree in Carroll County in November.

CYPRESS

TWIG BORER (Phloeosinus cristatus Lec.)

Arizona. C. D. Lebert (January 2): Several Arizona cypress trees observed to be dying as a result of these beetles, in the Phoenix area, during January. Arborvitae trees close by showed considerable twig injury. Seems to be more abundant each year.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

Massachusetts. E. P. Felt (February 20): Found in large numbers in several houses in the Boston area. Leaves showing characteristic feeding and remains of larvae were received from Cambridge early last November.

New York. E. P. Felt (February 20): Reported as being found in large numbers in the lower Hudson Valley.

Connecticut. E. P. Felt (February 20): Found in large numbers in several localities.

Massachusetts. A. I. Bourne (February 19): Numerous complaints received from housewives. Reported as extremely abundant. This report coincides with the increased abundance over the State the last two summers.

MAPLE

JAPANESE MAPLE SCALE (Leucaspis japonica Ckll.)

Pennsylvania. G. B. Slesman (February): New to this area. Found on Norway maples, privet, and dogwood. Prevalent in lower Merion Township, and severe damage reported on the above-mentioned plants. Reporter visited an estate in Narberth on February 13 and found several Norway maples severely damaged.

OAK

GIANT APHID (Longistigma caryae Harr.)

Mississippi. C. Lyle (February 21): Adults taken from oak in Washington County in November and in Marion County in February.

TWIG PRUNER (Hypermallus villosus F.)

Connecticut. E. P. Felt (February 20): Reported last December as somewhat abundant in vicinity of Hartford.

WHITE OAK CLUB GALL (Andricus clavulus O.S.)

New York. E. P. Felt (February 20): Reported as rather common in the White Plains area.

PINE

A SCALE (Matsucoccus gallicolus Morr.)

New York. E. P. Felt (February 20): Limited infestation of the pitted pine scale was found in midwinter in Long Island.

AN APHID (Cinara sp.)

Louisiana. E. H. Floyd (February 22): Large black aphid abundant on several loblolly pines near Baton Rouge.

WILLOW AND BIRCH

POPLAR AND WILLOW BORER (Sternochetus lapathi L.)

Oregon. J. Schuh (February 20): Evidences of feeding of the young larvae on willow and birch are beginning to show externally at Portland.

I N S E C T S A F F E C T I N G G R E E N H O U S E

A N D O R N A M E N T A L P L A N T S

GREENHOUSE LEAF TIER (Phlyctaenia rubigalis Guen.)

Virginia. C. R. Willey (January 15): Florist reported that larvae were ruining calendula, snapdragon, and chrysanthemum in greenhouse in Richmond. Specimens submitted January 15. Observations at greenhouse indicated that a great deal of damage had occurred. First report on this insect.

A MAGGOT (Hylemya sp.)

Alabama. J. M. Robinson (January 8): Have greatly reduced the stand of blue lupine in Ozark, Geneva, and Auburn.

SCALE INSECTS (Coccidae)

Alabama. J. M. Robinson (November 28): Pine scale insect, Toumeyella parvicornis Ckll., observed to be infesting evergreen at Florence. (Det. by H. Morrison.)

L. L. English (February 22): Specimens of a barnacle scale, Caroulastes cirripediformis Comst., on gardenia sent in from Spring Hill. (Det. by H. Morrison.)

Mississippi. C. Lyle (February 21): Florida red scale (Chrysomphalus aonidum L.) received from Yazoo County in November on palm. Barnacle scale (C. cirripediformis) reported in February from Lauderdale County, where garden plants were infested. Specimens of the camellia scale (Lepidosaphes camelliae Hoko) received from Harrison County in October and December. Reported as injuring camellia in Jackson County in December. Specimens of the tea scale (Fiorinia theae Green) received from three localities in Harrison County, where camellia and Japanese holly were said to be the host plants. Reported as injuring camellia in Jackson County. Specimens of Parlatoria camelliae Comst. were received from Lauderdale County in February. Specimens of the peony scale (Pseudonidia paeoniae Ckll.) on camellia twigs were received from Jackson County in January.

Texas. R. K. Fletcher (February 19): Begonia leaves infested with a soft scale. Coccus hesperidum L., were received from Hubbard, Hill County. (Det. by H. Morrison.)

Arizona. F. H. Parker (February 5): Scale insects, Aspidiotus lataniae Sign., received from Phoenix, Ariz. (Det. by H. Morrison.)

Nebraska. H. D. Tate (February 1): Leaves from a gardenia plant submitted from Gage County on February 1 were found to be infested with the soft brown scale, (C. hesperidum).

ARBORVITAE

AN APHID (Cinara tujaefilina Del G.)

Mississippi. C. Lyle (February 21): Plant lice that probably belong to this species were sent from Harrison County in January, where they were feeding on arborvitae. Report of similar injury received from Greene County.

Texas. E. W. Laake (February 20): Aphid attacking arborvitae cedars very abundant throughout the city of Dallas. Swarms of blowflies are attracted to the trees by the honeydew which covers the lower limbs of the trees.

A MITE (Tenuipalpus sp.)

California. L. M. Smith (February 24): Found hibernating as adult females clustered gregariously under bracts of arborvitae at San Jose. Probably T. erythreus Ewing. (Det. by E. A. McGregor.)

AZALEA

AZALEA SCALE (Eriococcus azalea Const.)

Mississippi. C. Lyle (February 21): Specimens sent in from two localities in Harrison County in December and February and reported in January from another property in this county.

Louisiana. C. O. Eddy (February 22): Abundant this year.

BOXWOOD

BOXWOOD LEAF MINER (Monarthropalpus buxi Laboulb.)

Connecticut. E. P. Felt (February 20): Larvae found exceptionally abundant on box at North Stamford.

HEMISPHERICAL SCALE (Saissetia hemisphaerica Targ.)

Mississippi. C. Lyle (February 21): Infested boxwood twigs received from Lauderdale County in February.

CHRYSANTHEMUM

CHRYSANTHEMUM APHID (Macrosiphoniella sanborni Gill.)

Arizona. C. D. Lebert (February 15): Observed in scattered areas over the entire Phoenix area. Terminal growth of plants heavily clustered with aphids at this date.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Const.)

Mississippi. C. Lyle (February 21): Specimens received from Lauderdale and Lee Counties, where euonymus plants were being injured in December.

Texas. R. K. Fletcher (January 30): Collected on euonymus in Dallas County on January 30.

FERN

FERN SCALE (Pinnaspis aspidistrae Sign.)

Virginia. Miriam B. Nock (February 7): Severe infestation on foliage of Ophiopogon jaburan (snakebeard) at Accomac on February 7. (Det. by H. Morrison.)

Mississippi. C. Lyle (February 21): Specimens received from Harrison County in December.

GLADIOLUS

GLADIOLUS THRIPS (Taeniothrips simplex Morison)

Florida. J. R. Watson (February 26): Becoming common in the Bradenton and, especially, Fort Myers sections.

CORN EAR WORM (Heliothis armigera Hbn.)

Florida. J. R. Watson (February 26): Boring stems of gladioli in the Bradent and Fort Myers sections.

HOLLY

JUMPING PLANT LICE (Paurocephala ilecis Ashm.)

Mississippi. C. Lyle (February 21): Jumping plant lice that probably belong to this species were received from Pike County in December and from Harrison County in January. Plant infested was yaupon (Ilex vomitoria).

Texas. R. K. Fletcher (January 25): Collected on evergreen yaupon in Harris County on January 25.

JUNIPER

SPRUCE NEEDLE MINER (Taniva albolineana Kearf.)

New York. R. E. Horsey (January 21): Large number of leaves webbed together on a small Swedish juniper were found in an ornamental planting at Rochester. Believed to have been caused by this insect, which caused the same injury to spruce in the planting a few years ago.

DEODAR WEEVIL (Pissodes nemorensis Germ.)

Mississippi. C. Lyle (February 21): Number of adults taken from deodar trees in Attala County in November and December.

JUNIPER SCALE (Diaspis carueli Targ.)

Massachusetts. E. P. Felt (February 20): Found to be extremely abundant early last November in the Boston area.

MAGNOLIA

A SCALE (Toumeyella turgida Ckll.)

Mississippi. C. Lyle (February 21): Scale insects that probably belong to this species were received on magnolia from Bolivar County in November and from Coahoma County in December on Japanese magnolia.

RHODODENDRON

RHODODENDRON LACEBUG (Stephanitis rhododendri Horv.)

Connecticut. E. P. Felt (February 20): Eggs found at Darien. Somewhat abundant last October in rhododendron leaves.

ROSE

APHIDS (Aphidae)

Georgia. J. E. Webb, Jr. (February 19): Numerous aphids (probably the pink and green rose aphid (Macrosiphum rosae L.)) observed in clusters on a few live leaves of a rose bush in a yard at Cornelia. Microscopic examination revealed a colony of 35 individuals, including only 1 adult wingless female, which was in the process of giving birth to living young. Low temperature was 27° F.

SPANISH BROOM

A PYRALIDID (Tholeria reversalis Guen.)

Arizona. R. A. Fock (December 5): Damage very severe at times, killing ornamental Spanish broom plants in the Tucson-Phoenix area. (Det. by C. Heinrich.)

I N S E C T S A T T A C K I N G M A N A N D

D O M E S T I C A N I M A L S

MAN

BEDBUG (Cimex lectularius L.)

Texas. R. K. Fletcher (January 31): Found infesting trailer in Bexar County.

Utah. G. F. Knowlton (February 26): Causing annoyance in a home at Salt Lake City.

MASKED HUNTER (Reduvius personatus L.)

Massachusetts. A. I. Bourne (February 17): Immature specimen of what appears to be this species received from West Brookfield, Worcester County. Reported as biting a human.

A FOWL MITE (Acarina)

Massachusetts. A. I. Bourne (February 19): Reported as attacking an invalid at Fitchburg, in the north-central part of the State, early in February. Caused considerable irritation and itching, which lasted for several days.

TROPICAL RAT MITE (Liponyssus bacoti Hirst.)

Texas. E. W. Laake (February 5): Reported as being annoying in a local residence.

BROWN DOG TICK (Rhipicephalus sanguineus Latr.)

Illinois. C. L. Metcalf (February 21): Reported from a dog kennel at Skokie, in the extreme northeastern part of the State late in December.

AMERICAN DOG TICK (Dermacentor variabilis Say)

Massachusetts. M. M. Cole (February 19): Last recorded activity on Martha's Vineyard was December 19 for larvae and August 20 for nymphs on meadow mice and October 31 for adults on a dog.

CHINCHE (Ornithodoros talaje Guer.)

New York. R. Matheson (February): Specimen taken from a house in Ransomville on December 13, 1940. Still alive on February 18. The species has been present in the home since about 1925.

CATTLE

SCREWORM (Cochliomyia americana C. & P.)

General. D. C. Parman (February 15): Fall infestations considerably above normal and over more than normal area throughout the Southwestern States. Infestations in southern Arizona and California were high. In California infestations were reported as far north as Redding, considerably farther north than has been reported before. Infestations were above normal in the western half of Texas, and in and about Laredo they were the highest ever recorded. Along the lower Gulf coast through eastern Texas, Louisiana, and Mississippi, infestations were low or entirely absent. Reports from Southeastern States indicated that infestations were low.

CATTLE GRUBS (Hypoderma spp.)

Missouri. L. Haseman (February 22): Examinations made the last week in January in central Missouri showed a few of the ox warbles almost ready to leave the backs of cattle, though most of the larvae had only recently arrived in the backs of the hosts.

Texas. E. W. Laake (January 15): Abundance and seasonal development of H. lineatum (DeVill.) in 100 cows of an average dairy herd in the vicinity of Dallas were as follows: 13 percent of the animals uninfested; 71 percent, 1 to 10 grubs each; 9 percent, 11 to 20 grubs; 5 percent, 21 to 30 grubs; 1 percent, 31 to 40 grubs; and 1 percent, 41 to 50 grubs. Of 491 cattle grubs, 24.2 percent were in the second stage and 75.8 percent were in the third stage. (February 15): Abundance and seasonal development in 227 dairy cows at Dallas were as follows: 70.9 percent of the animals uninfested, but most of them had scars on their backs, from which grubs had recently dropped; 28.6 percent had from 1 to 5 grubs each, and 0.4 percent had from 6 to 10 grubs. All of the 130 grubs still present in these animals were in the third stage and most of them were near maturity.

Colorado. F. C. Bishopp et al. (January 23): About 50 percent of the cattle in a herd at Virginia Dale were found to be infested with H. lineatum, ranging from 1 to 25 per head.

Wyoming. F. C. Bishopp et al. (January 24): Dairy herd of 40 head at Laramie found to be lightly infested with grubs. Only 1 animal raised locally. The other infested animals were from Casper, Wyo., and Johnstown, Colo. (February 27): Three herds were examined near Buffalo. One had only 4 animals which carried 2, 3, 16, 17 grubs. All extracted were H. lineatum, except 1, which was a second-instar H. bovis Deg. The second herd of 34 head had 2 animals uninfested and the others with from 1 to 63 grubs. All but 1 of those extracted were H. lineatum, and the 1 was a second-instar H. bovis. In the third dairy herd 12 animals were examined. One had no grubs and the other had from 1 to 27, all H. lineatum. A few grubs were approaching maturity in this locality. A group of about 125 head of calves and bulls near Parkman were examined. Most of those old enough to have grubs were infested, the number ranging from 1 to about 40. All but 2 of these were H. lineatum; these were second-instar H. bovis. A few were nearing maturity, probably beginning to leave the host in about 10 days. Four dairy herds were examined near Casper. In 1 of these 38 animals were grub-free and 9 were infested with from 1 to 10 grubs, all H. lineatum. In the second herd all were infested with from 1 to 17 grubs, 27 of which were extracted and all were H. lineatum except 1, which was a second-instar H. bovis. In the third herd all of the 13 animals examined were infested with from 1 to 10 grubs, all H. lineatum. In the fourth herd 4 animals were examined. Two were full and the other 3 carried 1, 1, and 20 grubs. All extracted were H. lineatum. Only 4 of the grubs were approaching maturity. One herd of 15 dairy cattle was examined near Douglas. Seven of these were free of H. lineatum grubs, the others carried from 1 to 20 grubs, only 4 of which were in the third instar (early). Two herds of 4 animals each were examined near Wheatland. These carried the following numbers of H. lineatum grubs: 0, 15, 19, 25 and 0, 1, 2, 21. Only 1 of those extracted was approaching maturity.

STABLEFLY (Stomoxys calcitrans L.)

Texas. E. W. Laake (February 15): Breeding has continued uninterrupted in nature all winter in the vicinity of Dallas. As many as 50 flies per animal observed feeding at 1 time on the forelegs of cattle on balmy days during January. Considerable annoyance to dairy cows and especially to calves in corrals observed on warm days throughout the winter.

BLACK BLOW FLY (Phormia regina Meig.)

Wyoming. F. C. Bishopp (February 27): One adult found in a store at Laramie. Fairly active specimen taken in room at Sheridan.

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus Nitz.)

Texas. E. W. Laake (February 20): Reported that about 9,000 cattle in Hemphill County were dipped during the winter for the control of long-nosed and short-nosed cattle lice. Generally, the short-nosed cattle louse is apparently less abundant this winter than last year, but reports have been

received from several western and northern counties of very heavily infested animals on some ranches. Heavily infested animals observed in Denton and Dallas Counties during January.

Wyoming. F. C. Bishopp et al. (February 27): Reported from Buffalo and Sheridan areas. One bull examined near Buffalo literally covered with lice and eggs.

LONG-NOSED CATTLE LOUSE (Linognathus vituli L.)

Texas. E. W. Laake (December 30): Light to medium infestations, particularly on calves, reported by ranchmen at Seymour, Baylor County. One report indicated that at least 50 percent of the animals on a ranch were infested. (January 3): Heavily infested herd observed in Anderson County, eastern Texas.

Wyoming. F. C. Bishopp (February 27): Few found on calves in a dairy near Laramie. Caused considerable trouble on calves late in winter.

HORSE

A HORSE BOTFLY (Gasterophilus sp.)

Missouri. L. Hasenan (February 22): Autopsy made in late January at Columbia showed larvae almost full grown, although an occasional larva was found to be scarcely half grown.

BIRDS

TICKS (Ixodes spp.)

Arkansas. W. J. Baerg (February 26): Reported commonly found on birds at North Little Rock.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

Termites (Isoptera)

Massachusetts. J. V. Schaffner, Jr. (February 24): Winged termites swarmed in basement room in eastern Massachusetts early in December 1940.

New York. J. V. Schaffner, Jr. (February 24): Specimens of winged termites sent in from dwelling house in New Rochelle late in January.

Pennsylvania and District of Columbia. R. A. St. George (February 10): Specimens of Reticulitermes flavipes Kol. received from Philadelphia, Pa., and Washington, D. C. recently. Were making flights in heated buildings.

Nebraska. H. D. Tate (February 24): R. tibialis Banks reported from Saline and Hall Counties in January and February.

Utah. G. F. Knowlton (February 20): Termites causing serious damage to wood structures in a house in Salt Lake City. (February 28): Termites damaging a house at Logan.

ANTS (Formicidae)

Virginia. F. W. Poos (February 11): Tetramorium caespitum L. found feeding on corn below the surface of the soil and on the leaf sheath just above the surface in our greenhouse at Arlington.

Illinois. C. L. Metcalf (February 21): Several reports on Pharaoh's ant (Monomorium pharaonis L.) received.

Mississippi. C. Lyle (February 21): M. pharaonis specimen received from Stone County in November. Ants (probably Prenolepis imparis Say) were received from Hancock County in January. Specimens of Iridomyrmex humilis Mayr were received from Hinds County in January. Reported as causing annoyance in homes. Specimens of Solenopsis xyloni McCook received from Bolivar, Leake, Lee, and Washington Counties. Several cases of trouble from this species observed around State College.

Nebraska. H. D. Tate (February 24): Specimens of Lasius interjectus Mayr were sent in from Douglas County on January 13 and February 17.

Texas. R. K. Fletcher (February 21): Ants found in Victoria County on January 11 and in Dallas County on January 18.

E. W. Laake (January and February): I. humilis, M. pharaonis, and Camponotus herculeanus pennsylvanicus Deg. reported as annoying in residences in Dallas.

Utah. G. F. Knowlton (February 5): Ants causing annoyance in one fruit room and two basement apartments at Logan.

GERMAN COCKROACH (Blattella germanica L.)

Mississippi. C. Lyle (February 21): Reported as annoying in a house in Marshall County in December.

Nebraska. H. D. Tate (February 24): Specimens received from Platte, Custer, and Saunders Counties during the period from January 1 to February 20.

Utah. G. F. Knowlton (January 20): Causing annoyance in a restaurant at Ogden and at Logan.

BROWN-BANDED COCKROACH (Supella supellectilium Serv.)

Illinois. C. L. Metcalf (February 21): Reported from Urbana.

LARGE BROWN ROACH (Periplaneta brunnea Burn.)

Louisiana. E. H. Floyd (February 22): Large colony discovered in Baton Rouge.

HOUSE CRICKET (Gryllus domesticus L.)

Mississippi. C. Lyle (February 21): Reported as being present in a residence in Harrison County.

CAMEL CRICKETS (Ceuthophilus sp.)

Mississippi. C. Lyle (February 21): Adults received in November from Lauderdale County, where they were causing annoyance in a house.

BOXELDER BUG (Leptocoris trivittatus Say)

Illinois. C. L. Metcalf (February 21): Prevalent and troublesome in many sections of the State throughout the winter.

Nebraska. H. D. Tate (February 24): Reported as present in Lancaster, Cuming, Washington, and Burt Counties during the period from January 12 to February 14.

Utah. G. F. Knowlton (February 26): Reported as causing serious annoyance in school buildings and one cafeteria at Logan and in homes at Brigham.

WEEVILS (Curculionidae)

Texas. R. K. Fletcher (January 24): Sitophilus oryza L., Tribolium sp., and Tenebrio sp. found in corn in Macogdoches County on January 24. Corn stored in the shuck was seriously injured.

Nebraska. H. D. Tate (January 11): Considerable number of adults and a few larvae of Tribolium confusum Duv. found in sample of rye received from Brown County. (February 8): Larvae of Tenebrio molitor L. collected from a grain bin in Dakota County. (February 24): Specimens of larvae of Attagenus nicens Oliv. submitted from Howard County on February 14. Reported found in alfalfa seed.

North Dakota. J. A. Munro (January 21): About 90 percent of the reports on stored-grain pests pertain to Laemophloeus minutus Oliv. Grain-storage-pest problem reported as very serious.

Montana. H. B. Mills (February 21): Tribolium madens Charp. reported at Savage. This is the second report for the State. Laemophloeus sp. reports from Baker, Broadview, Cascade, Conrad, Denton, Farmington, Hardin, Haure, Lewistown, Uln, and Williams Counties. Most abundant of grain insects found to date. Oryzaephilus surinamensis L. found in stored wheat at Baker, Bozeman, and Farmington in February. Sitophilus granarius L. found in stored wheat at Cascade and Haure in February. Cathartus advena Waltl. reported as attacking stored grain at Bozeman.

Oregon. J. Davis (February 14): C. quadricollis Guer. reported as attacking Mexican basket in a home at Portland.

POWDER POST BEETLES (Lyctus spp.)

Illinois. C. L. Metcalf (February 21): Lyctus sp. continue to cause many reports of damage from all sections of the State.

New Jersey. M. K. Bever (February 3): Specimens of L. planicollis Lec. reported taken at Teaneck from a bookcase said to be constructed of mahogany. (Det. by W. S. Fisher.)

A WEEVIL (Gibbium psylloides Czemp.)

Georgia. T. L. Bissell (January 21): Found in house at Griffin on January 21. First one collected by reporter.

DRUG STORE WEEVIL (Stegobium panicum L.)

New York. R. E. Horsey (February 22): Caused slight damage to dried flowers and leaves in a herbarium at Rochester. One live and active adult found on December 17 and another on February 5.

A MUSEUM PEST (Anthrenus museorum L.)

Massachusetts. E. P. Felt (February 20): Reported as practically destroying an amateur collection of insects at Hopkinton.

INSECT PEST SURVEY BULLETIN

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THE MORE IMPORTANT RECORDS FOR MARCH

During the first week in February the eggs of the lesser migratory grasshopper began hatching in California, and by the middle of March 70 percent of the eggs in unshaded fields had hatched.

Mormon crickets were observed to be hatching in the foothills of Utah, in the middle of March.

Early spring surveys in Oklahoma, Kansas, and Iowa indicate that winter mortality of chinch bug is comparatively low.

An outbreak of the greenbug is under way in central Oklahoma.

Fuller's rose beetle was reported as doing commercial damage in raspberry plantings in parts of California.

In New York the codling moth has passed the winter thus far with very low mortality. In the Yakima district, in Washington State, about 20 percent of the larvae had pupated by March 21.

Winter mortality of the plum curculio in the Fort Valley section of Georgia was unusually low. This insect is leaving hibernation late this spring, synchronizing with the late blooming of peach. The first adult was taken on March 17.

The green citrus aphid is becoming numerous in southern and central Florida.

Large numbers of pepper weevils have passed the winter successfully in Los Angeles and Orange Counties, Calif.

Winter survival of the Nantucket pine shoot moth in parts of Virginia is high.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

Utah. G. F. Knowlton and H. F. Thornley (March 15): A few nymphs, Hippiscus corallipes Hald., are present and $\frac{1}{2}$ inch long. (March 17): Nymphs of H. corallipes are from $\frac{1}{2}$ to $\frac{2}{3}$ inch long at Lofgreen and Government Creek in Tooele County.

California. C. C. Wilson (March 20): The first generation of Melanoplus mexicanus Sauss. began hatching about February 5 in alfalfa fields consisting of sparse and short plants, and on March 12 hatching was approximately 70 percent complete in unshaded fields. The stage of development ranged from the first to the fourth instar, with 87 percent in the second and third instars. Although hatching was incomplete, the population density ranged from 180 to 450 per square yard and damage was observed in several fields.

MORMON CRICKET (Anabrus simplex Hald.)

Utah. H. F. Thornley (March 13): A few have hatched just west of Lookout Pass, in Tooele County. Snow still partially covers some egg beds in Tooele, Juab, and Utah Counties.

G. F. Knowlton and H. F. Thornley (March 15): Mormon crickets hatching in the foothills south of Elberta in Utah County. (March 17): Eggs just beginning to hatch at Government Creek foothills, in Tooele County.

CUTWORMS (Phalaenidae)

Georgia. T. L. Bissell (March 29): Numerous cutworms found during month in fields of dead grass, leaves, and some green weeds, the most common one being Peridroma margaritosa Haw., which is about full grown.

Kansas. H. R. Bryson (March 27): Agrotis orthogonia Morr. reported as more abundant than usual at Atwood, in western Kansas. E. G. Kelly reports that they are abundant generally in the western counties of the State.

Oklahoma. F. A. Fenton (March 25): Serious damage to alfalfa by Chorizagrotis auxiliaris Grote reported from Tillman County.

Texas. R. K. Fletcher (March 21): Cutworms have done considerable damage to spinach and onions in Dimmit and Zavala Counties this spring.

Idaho. H. C. Manis (March 22): Some damage is being done by cutworms in commercial turnip fields in the vicinity of Parma.

Utah. E. H. Gibson (March 11): Cutworms exceptionally numerous in fields and gardens in and around Ephraim, in central Utah. Too early for much damage. (Determined by C. Heinrich who says it is possible that this is C. auxiliaris var. agrestis Grt.).

G. F. Knowlton (March 26): Cutworms apparent in some places around Logan.

STRAWBERRY FRUITWORM (Cnephasia longana Haw.)

Oregon. D. C. Mote (March 17): Omnivorous leaf tier, in the third instar, mining in leaves of some common weeds in the Willamette Valley.

AN ARCTIID (Estigmene sp.)

Georgia. T.L. Bissell (March 29): Some black caterpillars, probably Estigmene, half grown, were found during the month in fields of dead grass, leaves, and some green weeds.

WIREWORMS (Elateridae)

Iowa. H. E. Jaques (March): Reported from Dallas and Union Counties.

California. R. E. Campbell (March 18): Specimens of Limonius canus Lec. were submitted by C. S. Morley, who reported that adults were feeding on new grape shoots in the Arvin district. Three or four beetles were found feeding on the same shoot, and in many cases the terminal bud was destroyed. (Det. by M. C. Lane.)

WHITE GRUBS (Phyllophaga spp.)

Mississippi. F. A. Smith (March 29): Numerous in soil in the Senatobia area.

Iowa. H. E. Jaques (March): Present in Warren, Dallas, and Union Counties.

Texas. H. J. Reinhard (March 4): Twelve males and 7 females of P. calceata Lec. found in Galveston County. (March 15): One male and 2 females of P. rubiginosa Lec. noticed at light in Brazos County. These are both first-seasonal-activity records.

Utah. G. F. Knowlton (March 26): White grubs causing serious injury to lawns in one section of Salt Lake City. Several lawns in one block were heavily damaged, so that grass rolls back readily where roots have been eaten off.

SAY'S STINKBUG (Chlorochroa sayi Stal)

North Dakota. J. A. Munro (March): Overwintered adults picked up at random by D. Lawrence from bare flax stubble and cornfields at New England, Hettinger County, shortly following the season's lowest temperatures of -23° F. on February 26, showed approximately 60-percent mortality. One lot collected in an adjoining field of trashy summer-fallow ground showed only 15-percent mortality. Examination of adult females during first week of March revealed only slight egg development.

CEREAL AND FORAGE - CROP INSECTS

WHEAT AND OTHER SMALL GRAINS

CHINCH BUGS (Blissus leucopterus Say)

- Iowa. C. J. Drake (March 20): Preliminary results of spring survey now in progress indicate possibility of moderate to large-scale outbreaks this summer. Exceptionally large numbers went into winter quarters last fall and from the scattered reports available it seems fairly certain that a very large number survived the winter in the southwestern and western-central parts of the State.
- Kansas. H. R. Bryson (March 21): Hibernating in large numbers in the eastern third of the State. Examination of bunchgrass at Manhattan indicated mortality approximating 8 percent.
- Oklahoma. R. G. Dahms (March 24): Examination of 50 1/5-square foot samples of bunchgrass collected in 25 different points in Comanche County in March showed a total of 7,145 live and 60 dead chinch bugs, or a mortality of only 0.83 percent, the lowest percentage of winter mortality in both bunchgrass and sorghum stubble for any time in the last 5 years.
- C. F. Stiles (March 31): The hurried survey through the northeastern section of the State during the week ended March 29 showed that chinch bugs were still in hibernation in bunchgrass; however, the number seems to be slightly reduced from what it was last fall. No bugs were found in small grain. The weather is still cold, with temperatures below freezing on March 29.

GREEN BUG (Toxoptera graminum Rond.)

- South Carolina. W. C. Nettles (March 22): Early-planted winter oats and wheat in eastern half of State considerably infested and damaged by spring grain aphid.
- Oklahoma. C. F. Stiles (March 31): This pest has been reported within the last 48 hours from the following counties: Pottawatomie, Jefferson, Logan, Canadian, Kay, and Washington, scattered throughout the middle third of the State from north to south. The infestation seems to be limited mostly to barley. Plans are under way to make a hurried survey during the next few days to determine the extent of the infestation.

CORN

EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)

- Virginia. H. G. Walker (March 27): Very heavy carry-over of larvae in Princess Anne County. No pupae or prepupae were found in over 100 larvae examined on March 24.

CORN EAR WORM (Heliothis armigera Hbn.)

Florida. J. R. Watson (March 27): Injuring gladiolus by mining the blossom stalk.

Idaho. P. H. Shirck (March 10): Twenty-seven pupae, of which 25 were dead, were located in Parma, Canyon County, by digging in corn rows in several fields severely infested in 1940.

SEED CORN BEETLE (Agonoderus lecontei Chaud.)

Iowa. H. E. Jaques (March): Abundant in Cedar County, in the eastern part of the State, and reported from Floyd County, in the northern part.

ALFALFA

ALFALFA WEEVIL (Hypera postica Gyll.)

Utah. F. V. Lieberman (March 24): Eggs present in growing alfalfa stems of Millard County (central), the third week of March, a month before the usual appearance.

Nevada. G. G. Schweis (February 25): Larvae found on plants today, the earliest date ever recorded for finding larvae in western Nevada.

California. A. E. Michelbacher (March 26): Has caused damage only in a very localized area in the northwestern part of the San Joaquin Valley. In several fields the feeding has been heavy but damage has not been serious. Infestation over the valley is light, much less than a year ago. Number of larvae collected on March 25 in the infested area ranged from 0 to 2,547 per 100 sweeps, as compared with 1 to 55 per 100 sweeps collected in the San Francisco Bay survey made on March 20. Parasitization by Bathyplectes curculionis Thos. of last-instar weevil larvae, determined by rearing out the parasites from larvae collected on March 14, amounted to about 40 percent in the San Joaquin Valley, as compared with 92 percent in the San Francisco Bay area. At Pleasanton, on March 20, 4 fields were surveyed without a single weevil being taken.

ALFALFA CATERPILLAR (Colias eurytheme Bdv.)

South Carolina. F. Shorman (March 22): Clover butterflies (Colias sp.) in flight in small numbers at Clemson since mid-March.

California. A. E. Michelbacher (March 26): Larvae of C. eurytheme very scarce in San Joaquin Valley on March 25. In most of the fields none were collected.

PEA APHID (Macrosiphum pisi Kltb.)

Oregon. K. W. Gray (March 17): Found attacking peas and vetches in the Willamette Valley. Few winged migrants found. Usually these occur late in April. Syrphid eggs present earlier than usual and about 2 weeks ahead of normal season.

TARNISHED PLANT BUGS (Lygus spp.)

Utah. G. F. Knowlton (March 21): L. elisus Van D. and L. elisus hesperus Knight now emerging from hibernation in northern Utah alfalfa fields and gardens.

VETCH

GARDEN SLUG (Agriolimax agrestis L.)

Oregon. B. G. Thompson (March 17): Still doing considerable damage in the Willamette Valley, especially to clover planted in February, 30,000 acres of crimson clover and hairy vetch being so severely damaged that it was necessary to plough up the fields and plant to other crops.

HOP LOOPER (Hypena humuli Harr.)

Alabama. J. M. Robinson (February 28): Reported active on vetch.

F R U I T I N S E C T S

SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata F.)

Georgia. O. I. Snapp (March 17): Adults have begun to appear from hibernation at Fort Valley, several having been jarred from peach trees today.

Texas. W. S. McGregor (March 15): Many adults found feeding on blossoms of plums and peaches in Brazos County.

FULLER'S ROSE WEEVIL (Pantomorus godmani Crotch)

California. G. Kido (March 27): Found doing considerable damage to commercial raspberry plantings in the Mountain View district. Counts made showed that 96 percent were in the larval stage and the remainder in the pupal stage.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Mississippi. N. L. Douglass (March 29): Several peach-tree infestations reported from Grenada and Tallahatchie Counties.

A BUTTERFLY (Polygonia interrogationis F.)

Georgia. T. L. Bissell (March 25): A plum tree in blossom is attracting several butterflies of this species.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Michigan. R. Hutson (March 26): Very little scale apparent in the fruit-growing districts, despite continued search.

Mississippi. C. Lyle (March 29): Reported causing much injury to untreated trees in the Grenada area. Also present in Lauderdale and Pike Counties according to N. L. Douglass.

Oklahoma. F. A. Fenton (March 25): Present at Soper, Choctaw County, in the southeastern part of the State.

WHITE PEACH SCALE (Aulacaspis pentagona Targ.)

Georgia. O. I. Snapp (March 19): Light infestation in several peach orchards at Fort Valley, in central Georgia.

Alabama. J. M. Robinson (February 18): Reported on kudzu in Autauga County.

Louisiana. C. O. Eddy (March 1): Specimens found on plum tree at Clarks. (Det. by H. Morrison.)

SCURFY SCALE (Chionaspis furfura Fitch)

Pennsylvania. H. M. Steiner (March 28): Generally prevalent in Adams County in many old apple orchards, with occasional limbs heavily encrusted. Most of the old scales on young twigs are filled with eggs. In 1940 few of the old scales covered eggs.

Michigan. R. Hutson (March 26): Small amount in vicinity of Bangor, in southwestern Michigan.

THRIPS (Frankliniella spp.)

California. S. F. Bailey (March 22): Very scarce on plums and peaches.

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

New York. D. W. Hamilton (March 27): Mortality of overwintered larvae at Poughkeepsie is very low. Larvae overwintering under paper bands on tree trunks were examined March 26 and less than 12 percent were dead. Minimum winter temperature for Poughkeepsie was -12° F. Temperatures were below zero on five different nights. Dutchess County temperatures ranged at least 10° below those recorded for Poughkeepsie.

Missouri. L. Haseman (April 1): This insect has come through in perfect condition; and a heavy first brood infestation is expected.

Washington. M. A. Yothers and F. W. Carlson (March 21): About 20 percent of the larvae have pupated in the apple orchards at Yakima. Season is a few days earlier than last year.

EASTERN TENT CATERPILLAR (Molacosoma americana F.)

Florida. S. O. Hill (March 23): First colony observed feeding on wild crab apple in the vicinity of Monticello, in the northern part of the State.

Oklahoma. F. A. Fenton (March 25): Just hatching at Millerton, in the extreme southeastern part of the State.

FRUIT TREE LEAF ROLLER (Cacoecia argyrospila Walk.)

Illinois. W. P. Flint (March 22): Egg masses found more abundant than last year in Adams, Pike, and Brown Counties, in western Illinois. In woodland areas they are so abundant that partial defoliation is sure to occur if weather is favorable to the young caterpillars.

PISTOL CASEBEARER (Coleophora malivorella Riley)

Pennsylvania. H. M. Steiner (March 28): Moderately abundant in approximately 1,500 acres of apple orchard in Adams County, southeastern Pennsylvania.

A TENTIFORM LEAF MINER (Gracilardiidae)

Pennsylvania. H. M. Steiner (March 28): Tentiform leaf miner pupae very abundant in fallen leaves on ground beneath trees in several Adams County apple orchards.

APHIDS (Aphidae)

Pennsylvania. H. M. Steiner (March 28): Eggs of apple aphids are more numerous in Adams County orchards than in recent years. A few newly hatched apple grain aphids (Rhopalosiphum prunifoliae Fitch) were observed on March 24, but little hatching has occurred.

Michigan. R. Hutson (March 26): Aphid eggs very numerous in apple orchards throughout the State.

Idaho. H. C. Manis (March 22): Green apple aphid (A. pomi) abundant again, especially in untreated orchards.

Oregon. B. G. Thompson (March 17): Rosy apple aphids (Anuraphis rosaeus Baker) beginning to appear in early apples in the Willanette Valley.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Pennsylvania. H. M. Steiner (March 28): Populations vary greatly within Adams County apple, peach, and cherry orchards, the eggs being most numerous in blocks interplanted with two of the fruits. Eggs scarce on trees that dropped their leaves before mid-October of the previous year.

Michigan. R. Hutson (March 26): Extremely numerous in all sections of the State.

PEACH

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia. O. I. Sharp (March 19): Mortality of adults in hibernation at Fort Valley was unusually low last winter, but this was expected, as temperatures no lower than 20° F. were recorded during the winter. Of 938 field-reared adults placed in Bermuda grass and oak leaves for hibernation, 485, or 51.7 percent, survived the winter of 1940-41, and of 435 insectary-reared adults placed in the same kind of hibernating materials, 296, or 68 percent, survived the winter. Although plum and peach trees were jarred daily since March 3, the first adult was not taken by jarring until March 17. Adults do not appear from hibernation in numbers until the mean temperature has been above 60° F. for several successive days, and no such period of warm weather has occurred. They are late leaving hibernation but the peach trees are also late in blooming.

Texas. W. S. McGregor (March 21): Three adults jarred from 12 plum trees in Brazos County.

PEACH BORER (Conopia exitiosa Saw)

Mississippi. C. Lyle (March 29): Reported injuring peach trees in Lawrence County.

Nevada. G. G. Schweis (March 5): Borers, Conopia sp., found infesting peach trees in Reno in February.

PEACH TWIG BORER (Anarsia lineatella Zell.)

California. S. F. Bailey (March 22): Emerged about a week ahead of last year and some larvae are already mature, which indicates an early brood the latter part of April.

GREEN PEACH APHID (Myzus persicae Sulz.)

Idaho. H. C. Manis (March 22): Abundant, especially in untreated orchards.

TERRAPIN SCALE (Lecanium nigrofasciatum Perg.)

Pennsylvania. H. M. Steiner (March 28): Few heavy infestations, but scales are common in many peach orchards in Adams County.

PEAR

PEAR THRIPS (Taeniothrips inconsequens Uzel)

Oregon. S. C. Jones (March 3): First emergence found in opening Italian prune buds at Salem, Keizar Bottom District, on March 3.

California. S. F. Bailey (March 22): Emergence is lightest in 10-year record. Little or no bud damage occurred on either pears or prunes in the major deciduous-fruit-growing counties.

CHERRY

BLACK CHERRY APHID (Myzus cerasi F.)

Idaho. H. C. Manis (March 22): Abundant, especially in untreated orchards.

PLUM

LEAF CRUMPLER (Mineola indigenella Zell.)

Idaho. H. C. Manis (March 22): Larvae heavily infesting prune orchards in Gem and Canyon Counties. Most orchards examined have light infestations.

CURRENT

GOOSEBERRY BORER (Xylocrius agassizi Lec.)

Oregon. J. Schuh (March 10): Specimens found in currant roots at Oregon City.

PECAN

HICKORY SHUCK WORM (Laspeyresia caryana Fitch)

Florida. S. O. Hill (March 12): First adult emerged from caged material at Monticello on March 12.

GIANT APHID (Longistigma caryae Harr.)

Mississippi. C. Lyle (February 20): Specimens taken from pecan in Harrison County.

Maryland. E. P. Felt (March 31): Eggs extremely abundant on pin oak at Bethesda.

CITRUS

GREEN CITRUS APHID (Aphis spiraeicola Patch)

Florida. J. R. Watson (March 27): Becoming numerous in southern and central parts of the Citrus Belt. The Chinese ladybeetle (Leis dimidiata quinque-decimpilata Hope), which for many years has done such effective work in keeping down this aphid in Orange County, is very scarce, probably due to the scarcity of aphids during the dry fall.

PURPLE SCALE (Lepidosaphes beckii Newm.)

Florida. J. R. Watson (March 27): More abundant than during average years.

FLORIDA RED SCALE (Chrysomphalus aonidum L.)

Florida. J. R. Watson (March 27): More abundant than during average years.

HEMISPHERICAL SCALE (Saissetia hemisphaerica Targ.)

Texas. R. K. Fletcher (March 11): Found on palm in Anderson County.

A SPIDER (Tetranychus sp.)

California. R. S. Woglum (March): Eggs abundant in many orchards, even though heavy rains have checked and in some places reduced the spider.

TRUCK - C R O P I N S E C T S

VEGETABLE WEEVIL (Listroderes obliquus Klug)

Florida. F. S. Chamberlin (March 26): Moderately abundant on tobacco-plant beds in Gadsden County.

J. R. Watson (March 27): Larvae received from Panama City and Chipley. It is believed that Panama City is the farthest south that any infestation has been reported.

Mississippi. C. Lyle (March 29): Larvae feeding on cabbage in Winston County on March 7. T. F. McGehee observed damage to turnips in the Gulfport area.

Texas. W. S. McGregor (March 1): Heavy infestation in Milan County where the insect completely defoliated turnips and cabbage.

SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata F.)

Virginia. H. G. Walker (March 24): Active on warm days throughout the winter at Norfolk.

Georgia. T. L. Bissell (March 29): Female which was caught on February 28 at Experiment and caged out of doors began laying eggs on March 11. Two adults, one in flight, found on March 19. Large number caught on March 24 by sweeping row of dead Bermuda grass which covers small green vetch.

Louisiana. C. O. Eddy (March 29): Adults are numerous.

SEED-CORN MAGGOT (Hylemya cilicrura Rond.)

Virginia. H. G. Walker (March 27): Adults active on warm days during March at Norfolk.

Florida. J. R. Watson (March 27): Reported injuring beans in Alachua and Marion Counties, and cucumbers in Sumter County.

Mississippi. C. Lyle (March 22): Small English-pea plants, evidently injured by the seed-corn maggot, were received from Harrison County.

CABBAGE LOOPER (Autographa brassicae Riley)

Florida. G. M. Hocking (March 14): Specimen picked from peppermint plant growing in a sand culture in the University greenhouse at Gainesville. Started pupating on February 25 and imago emerged on March 10. (Det. by J. F. G. Clarke.)

MOLE CRICKETS (Scapteriscus sp.)

Florida. F. S. Chamberlin (March 17): Less abundant than normal on tobacco-plant beds in Gadsden County.

GARDEN CENTIPEDE (Scutigera immaculata Newp.)

Utah. G. F. Knowlton (March 20): Abundant and causing severe damage in several gardens at Providence.

TOMATO

APHIDS (Aphidae)

Florida. J. R. Watson (March 27): Severe outbreak on tomatoes in Manatee County, the principal species being Macrosiphum solanifolii Ashm., with Myzus persicae Sulz. less numerous.

Utah. G. F. Knowlton (March 21): Aphids reported attacking tomato in experimental greenhouse at Logan.

PEAS

PEA APHID (Macrosiphum pisi Kltb.)

Louisiana. E. H. Floyd and C. O. Eddy (March 29): Common but not abundant.

CABBAGE

APHIDS (Aphididae)

Virginia. H. G. Walker (March 27): Few cabbage aphids present in old cabbage and kale fields at Norfolk. Very scarce on young cabbage plants carried over the winter for the spring crop.

SPINACH

GREEN PEACH APHID (Myzus persicae Sulz.)

Virginia. H. G. Walker (March 27): Very abundant on spinach in the Norfolk district last November and early in December but were nearly all killed by a fungus disease. Very scarce now.

STRAWBERRY

APHIDS (Aphididae)

Utah. G. F. Knowlton (March 21): Aphids are attacking strawberries in experimental greenhouse at Logan.

A SPITTLE BUG (Philaenus leucophthalmus L.)

Oregon. R. G. Rosenstiel (March 17): First-stage nymphs feeding freely on strawberries in the Willamette Valley.

A RED SPIDER (Tetranychus sp.)

Virginia. H. G. Walker (March 27): Very scarce in most strawberry fields at Norfolk.

PEPPER

PEPPER WEEVIL (Anthonomus eugenii Cano)

California. J. C. Elmore (March 20): Has survived the winter in larger numbers than usual in Los Angeles and Orange Counties. Adults have been found on black nightshade wherever peppers have been grown. Collections from 20 plants from 10 localities indicated a range of from 0 to 25 weevils per plant, with an average of 3 per plant.

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis Boh.)

Florida. C. S. Rude (March 15): Seventeen active weevils were observed in hibernation cages at McIntosh during the week. Nine were observed in cages in which leaves were used as bedding and 8 in cages where coarse grass was used. (March 22): Nine active weevils were observed in hibernation cages where forest leaves were used as bedding, and 15 active weevils in those where coarse grass was used. (March 29): Active in hibernation cages during the week, notwithstanding cool weather.

Texas. H. S. McGregor (March 4): Jarred from peach tree in Brazos County.

K. P. Ewing et al. (March 28): Observed active in McLennan County in all series of hibernation studies. Greatest number observed in any cage was four.

PINK BOLLWORM (Pectinophora gossypiella Saund.)

Texas. A. J. Chapman (March 15): Examinations completed during the week showed approximately 20-percent mortality in the bolls on the stalks but there was no significant mortality in the bolls on the soil surface.

Mexico. A. J. Chapman (March 29): Examination on March 18 of a sample of open cotton bolls installed on the soil surface last fall at Vado de Cedillas in the lower Juarez Valley revealed that mortality during the winter was 56.18 percent. There were 2.35 larvae per boll at the time the bolls were installed last fall and 1.03 larvae per boll on March 18. A minimum temperature of 16° F. was recorded on January 18.

COTTON FLEA HOPPER (Psallus seriatus Reut.)

Louisiana. I. J. Beemel (March 24): First nymphs emerged from cages.

Texas. K. P. Ewing et al. (March 28): First emergence from cages at Waco recorded on March 22, on which date 38 nymphs emerged from croton plants. From March 22 to 28, inclusive, 3,367 nymphs emerged, 56 being from plants other than croton. R. L. McGarr inspected croton plants near Rockport on March 20 and reported that several nymphs were observed, the largest being in the fourth instar.

TARNISHED PLANT BUG (Lygus pratensis oblineatus Say)

Louisiana. R. C. Gaines et al. (March 8): One specimen collected on field flight screens in Madison Parish during the week, as compared with 19 in 1939 and none in 1940. (March 29): Specimens taken on field flight screens in Madison Parish for week ended March 28 totaled 3, as compared with 2 in 1940 and 1 in 1939.

FOREST AND SHADE-TREE INSECTS

CANKERWORMS (Geometridae)

Ohio. T. H. Parks (March 25): Males of cankerworms first seen in flight on March 20. Wingless females of the fall species (Alsophila pometaria Harr.) were emerging and laying eggs on elm twigs on March 22.

N. E. Howard (March 20): Male cankerworm moths emerging and in flight in the Olentangy River Valley today. Wingless female moths are emerging and crawling up the trunks of trees at Columbus and being caught in tanglefoot bands where present.

Indiana. P. T. Ulman (March 29): Bands on elm trees and others showed very light emergence of Paleacrita vernata Peck. on March 3. Medium heavy flight on March 19, 20, and 25.

Illinois. W. P. Flint (March 22): Observations of tanglefoot bands at points in north-central Illinois show that adult cankerworms began going up trees as early as February 3. More or less continuous emergence every warm evening for the last month. Heavy infestation expected.

Kansas. H. R. Bryson (March 27): A few spring and fall cankerworm moths came to bands at Manhattan on February 7 but have been emerging very slowly since. P. vernata began emerging about March 1.

Missouri. L. Haseman (April 1): Emergence of P. vernata in the open in central Missouri reached a peak during last 10 days of March, and tanglefoot bands are now covered with male and female moths. Considerable numbers are still emerging.

Texas. R. K. Fletcher (March 8): First-instar P. vernata found feeding on plum and elm at McLennon County on March 8.

GYPSY MOTH (Portheia dispar L.)

Vermont. H. L. Bailey (March 22): Egg masses abundant and generally distributed in Connecticut River Valley towns, southeastern Vermont, from and including Springfield to Massachusetts line. Particularly abundant in Rockingham.

A TUSOCK MOTH (Hemerocampa definita Pack.)

Vermont. H. L. Bailey (March 22): Egg masses more numerous than usual on trees in Newbury, Bradford, and other towns in eastern Vermont.

A TENT CATERPILLAR (Malacosoma sp.)

Oregon. B. G. Thompson (March 15): Hatching about 3 weeks early in the Willamette Valley. Small larvae and nests observed on March 15.

SCALE INSECTS (Coccidae)

Oklahoma. F. A. Fenton (March 25): Specimens of Chionaspis americana Johns. were received from Hennessey, northwest of the central part of the State and specimens of Aspidiotus ancylus Putn. from Bennington, in the south-eastern part.

Mississippi. C. Lyle (March): Specimens of A. lataniae Sign. and Lecanium nigrofasciatum Perg. were received from Harrison County, where they were taken from huckleberry on March 10 and 29, respectively.

Idaho. A. L. Gibson (March 23): A scale insect, probably Lepidosaphes ulmi L., was observed on willow on the east side of Pend Oreille Lake, Bonneville County. This species is responsible for heavy loss in willow brush and ceanothus on burned and cut-over land in Kootenai County near Coeur d'Alene in recent years.

SAWFLIES (Xyela spp.)

Virginia. L. A. Hetrick (March 20): Adults of several species of sawflies abundant on catkins of alder in New Kent County. Larvae probably develop in staminate cones of pines.

ASH

BANDED ASH BORER (Neodactylus caprea Say)

Nebraska. H. D. Tate (March 12): Specimens received from Furnas County.

CARPENTER WORM (Prionoxystus robiniae Peck)

Nebraska. H. D. Tate (March 14): Specimen sent in from Harlan County.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

Massachusetts. A. I. Bourne (March 24): Numerous complaints of hibernating beetles received during the winter, indicate a heavy and general infestation over the State.

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus Marsh.)

Massachusetts. C. L. Griswold (March 25): Very low population reported for eastern Massachusetts, an area where the Dutch elm disease is not yet known to occur. Five days were spent in scouting for in-

infested material, examining fallen elm trees and hangers of type usually favorable for attack. Living material was found in only 2 trees at Lexington. In early 1940 a similar, but more intense, search was made in the same area, and very little was found, although the beetle has been known to exist in this general region since before 1909.

LARCH

LARCH CASEBEARER (Coleophora laricella Hbn.)

Connecticut. E. P. Felt (March 31): Moderately abundant on larches at Stanford.

LINDEN

AN APHID (Myzocallis tiliae L.)

New York. E. P. Felt (March 31): Eggs abundant on lindens in the Bronx area of New York City.

OAK

PUBESCENT OAK KERMES (Kermes pubescens Boque)

Connecticut. E. P. Felt (March 31): Apparently increasing in abundance since a badly infested tree was noted at Stanford.

KNOTTY OAK GALL (Andricus punctatus Bass.)

Massachusetts. E. P. Felt (March 31): The knotty or gouty oak gall was found extremely abundant on a red oak in the Cape Cod area.

PINE

NANTUCKET PINE SHOOT MOTH (Rhyacionia frustrana Comst.)

Virginia. L. A. Hetrick (March 21): First field emergence of adults noted in King and Queen County on March 21. Winter survival of pupae in infested pine shoots has been much greater than last winter.

Georgia. T. L. Bissell (March 19): Numerous pupae, presumably R. frustrana, found in branch tips of young pine.

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana Schiff.)

Connecticut. E. P. Felt (March 31): Becoming somewhat more prevalent in southwestern part of the State and adjacent areas.

PITCH TWIG MOEH (Petrova constockiana Fern.)

New York. E. P. Felt (March 31): Injury moderately abundant in the Bronx, New York City.

DEODAR WEEVIL (Pissodes nemorensis Germ.)

West Virginia. F. Waldo Craig (February 25): Seriously damaging large red pine trees in an 8- to 12-year-old plantation in Mingo County, chiefly from the ground line to 6 - 12 inches above, and almost entirely in the inner bark and cambium layer of the tree. (Det. by L. L. Buchanan.)

RED TURPENTINE BEETLE (Dendroctonus valens Lec.)

Massachusetts. E. P. Felt (March 31): Continues to be an important pest of pines in the Cape Cod area.

PALES WEEVIL (Hylobius pales Hbst.)

Delaware. E. P. Felt (March 31): Caused somewhat serious injury to small pines in the Wilmington area.

A PINE WEEVIL (Scythropus ferrugineus Casey)

Oregon. R. L. Post (March 15): Abundant in a small area in the vicinity of Peoria, in the Willamette Valley. Adults are making their typical, broadly serrate feeding injuries on yellow pine needles, especially on young trees.

WHITE PINE APHID (Cinara strobis Fitch)

New York. E. P. Felt (March 31): Eggs extremely abundant on red pine at Harriman, Orange County.

PINE NEEDLE SCALE (Chionaspis pinifoliae Fitch)

Connecticut. E. P. Felt (March 31): Somewhat abundant on pines at Stamford.

SPRUCE

EASTERN SPRUCE GALL APHID (Adelges abietis L.)

Connecticut. E. P. Felt (March 31): Abundant on individual trees in south-western part of State.

INSECTS AFFECTING GREENHOUSE
AND ORNAMENTAL PLANTS.

A TORTRICID (Platynota stultana Wlsm.)

California. G. Kido (March 15): Approximately 75 percent found in the larval stage according to counts made on greenhouse carnations in the Hayward district. Few adults caught and mature ovaries found in the females.

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

South Carolina. W. C. Nettles (March 22): Present in numbers in at least two eastern localities.

OLEANDER SCALE (Aspidiotus hederæ Vallot)

Mississippi. C. Lyle (March 29): Reported as infesting potted plants in Panola County.

Nebraska. H. D. Tate (March 13): Infested leaf received from Dixon County.

A SCALE INSECT (Parlatoria theae Ckll.)

North Carolina. J. O. Rowell (February 28): Specimens collected from an unidentified ornamental plant at Reidsville. (Det. H. Morrison.)

GREENHOUSE LEAF TIER (Phlyctaenia rubigalis Guen.)

New York. P. Gane (February 8): Specimen of moth found in greenhouse on snapdragon at North Tonawanda. (Det. by C. Heinrich.)

WHITE FLIES (Aleurodidae)

Utah. G. F. Knowlton (March 21): Several flowering plants damaged in a greenhouse at Logan.

ARBORVITAE

AN APHID (Cinara tujaefilina Del G.)

Virginia. C. R. Willey (March 17): Very abundant on Chinese arborvitae, especially the compact types, in the Richmond area.

Mississippi. C. Lyle (March 29): Reported feeding on arborvitae in Lowndes, Monroe, and Noxubee Counties.

Arkansas. W. J. Baerg (March 31): Heavy infestation on arborvitae at Fayetteville.

Oklahoma. F. A. Fenton (March 25): Very common throughout the State early in the year. Unusually severe infestation.

R. G. Dahms (March 24): Reported very abundant in the vicinity of Lawton.

AZALEA

AZALEA SCALE (Eriococcus azaleae Comst.)

Mississippi. M. L. Grimes (March 29): Reported injuring azalea plants in Clarke County.

BOXWOOD

BOXWOOD LEAF MINER (Monarthropalpus buxi Laboulb.)

Connecticut. E. P. Felt (March 31): Locally abundant on ornamental box at Stamford.

CAMELLIA

RED SPIDER (Tetranychus sp.)

Mississippi. G. L. Bond (March 29): Heavy infestations on camellia observed in coast counties. Rather unusual for this time of year.

CAMELLIA SCALE (Lepidosaphes camelliae Hoke)

Mississippi. C. Lyle (March 19): Specimens of infested camellia leaves received from Harrison County. Fairly abundant along Gulf coast, according to observations of T. F. McGehee.

TEA SCALE (Fiorinia theae Green)

Mississippi. C. Lyle (March 29): Specimens of infested camellia received from Harrison County on March 19. G. L. Bond reported rapid development along the Gulf coast during recent weeks.

A SCALE (Lecaniodiaspis sp.)

Alabama. J. M. Robinson (March 1): Reported as active on camellia at Montgomery.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

Delaware. L. A. Stearns (February 24): Infested material received from Ocean View, Sussex County.

Alabama. J. M. Robinson (March 11): Reported as active on ornamental shrub at Montgomery.

GLADIOLUS

GLADIOLUS THRIPS (Taeniothrips simplex Morison)

Florida. J. R. Watson (March 27): Heavily infesting gladiolus in southwestern counties. Appeared in large numbers about first of January.

PHLOX

PHLOX PLANT BUG (Lopidea davisi Kngt.)

West Virginia. F. Waldo Craig (February 25): Collected from phlox in Parkersburg, where growers report them quite general. (Det. by H. G. Barber.)

ROSE

THRIPS (Thysanoptera)

Louisiana. E. H. Floyd (March 29): Abundant on roses.

INSECTS ATTACKING MAN AND
DOMESTIC ANIMALS

MAN

BEDBUG (Cimex lectularius L.)

Delaware. J. M. Amos (March 25): Two infestations in poultry houses reported in Sussex County, southern Delaware.

Iowa. C. J. Drake (March 20): Reported from Muscatine and Emmetsburg.

Nebraska. H. D. Tate (March 11): Reported from Morrill County.

Utah. G. F. Knowlton (March): Annoying in homes at Logan and Providence.

Oregon. J. Davis (March 10): Reported from Estacada.

SANDFLIES (Culicoides sp.)

South Carolina. W. C. Nettles (March 22): Troublesome in eastern section of the State during the winter.

DOG FLEA (Ctenocephalides canis Bouche)

Nevada. G. G. Schweis (March 5): Overran a house in Reno in February.

FLEAS (*Siphonaptera*)

Oregon. R. L. Post and J. Davis (March): Numerous in barn and house at Lebanon on March 8. Reported in new home at Oswego on March 11. Abundant in all stages in a dog's bed at Corvallis on March 7.

A GNAT (*Chaoborus* sp.)

California. A. W. Lindquist (March 3): Larval population in bottom mud at Nice approximately 40 percent greater than during February 1940.

TROPICAL RAT MITE (*Liponyssus bacoti* Hirst)

Delaware. J. M. Amos (March 3): Infestation reported from Wyoming. Tenants had been bothered with mites since first of year. Several hundred mites were found. The occupant of the house said that the mites were fewer at this time than immediately after the treatment for rats, which had been completed about a week before the inspection was made.

WOOD TICKS (*Ixodidae*)

Idaho. A. L. Gibson (March): Noted as quite abundant in southern Bonner County on March 8 and 23. Unusually active for this time of year.

BLACK WIDOW SPIDER (*Latrodectus mactans* F.)

Mississippi. C. Lyle (March 21): Live adult female sent from Amite County.

CATTLE

STABLEFLY (*Stomoxys calcitrans* L.)

Florida. W. E. Dove (February 28): Adults continued to emerge in cages on peanut litter in Florida throughout the winter.

CATTLE GRUBS (*Hypoderma* spp.)

Oklahoma. J. M. Maxwell (March 29): First heel fly activity observed about March 15 near Lawton. No report from southeastern part of State where flies ordinarily occur earlier. Between 15,000 and 20,000 head of cattle were treated. Ox warble (*H. lineatum* De Vill) abundant throughout the State during winter.

Texas. E. W. Laake (March 1): Survey of 227 dairy cows at Dallas on February 15 showed that 70.9 percent of the animals were uninfested. Most of the animals had scars on backs from which grubs had recently dropped; 28.6 percent had from 1 to 5 grubs each; and 0.4 percent had from 6 to 10 grubs. All grubs were extracted and found to be third instar, most of them being near maturity.

E. C. Cushing (March 11): Heel flies were active in the vicinity of Menard during the first half of February.

Utah. G. F. Knowlton (March 21): Infesting several milk cows at Farmington.

CATTLE BITING-LOUSE (Bovicola bovis L.)

Mississippi. C. Lyle (March 29): Specimens received from Franklin County on February 23. Reported on cattle from Lauderdale and Neshoba Counties. (Det. by E. W. Stafford.)

A BITING LOUSE (Trichodectes scalaris Nitz.)

Oklahoma. J. M. Maxwell (March 29): Abundant throughout State and causing considerable annoyance to cattle.

LONG-NOSED CATTLE LOUSE (Linognathus vituli L.)

Oklahoma. J. M. Maxwell (March 29): Abundant and extremely troublesome in localized areas throughout the State.

SOUTHERN BUFFALO GNAT (Eusimulium pecuarum Riley)

Mississippi. F. A. Smith (March 19): Observed in small numbers in Coahoma and Quitman Counties.

SHEEP

SHEEP TICK (Melophagus ovinus L.)

Oklahoma. J. M. Maxwell (March 29): Light to abundant in certain localities.

Oregon. D. C. Mote (March 9): Reported attacking karakul sheep at Tillamook.

BLACK BLOWFLY (Phormia regina Meig.)

Utah. G. F. Knowlton (March 21): Adults active at Logan.

SHEEP BITING-LOUSE (Trichodectes ovis L.)

Oklahoma. J. M. Maxwell (March 29): Causing considerable damage to sheep throughout the State.

MISCELLANEOUS ANIMALS

A SUCKING LOUSE (Linognathus setosus Olfers)

Pennsylvania. E. J. Udine (March 8): Heavily infested dog at Carlisle.

CHIMNEY SWIFT BUG (Cinexopsis nyctalis List.)

Illinois. E. A. Back (December 6): Specimens received from Marshall.
Seemed to come from a fireplace. (December 27): Specimens received from Muscatine.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

TERMITES (Isoptera)

Delaware. J. M. Amos (March 21): First swarm reported at Newark.

Georgia. T. L. Bissell (March): Winged forms observed in dwelling houses on March 17 and 26.

Mississippi. C. Lytle (March 29): Reported during month from Bolivar, Copiah, Forrest, Hinds, Jones, Lee, Monroe, and Wilkinson Counties. N. L. Douglass reported them from Grenada, Montgomery, and Tallahatchie Counties.

Missouri. L. Haseman (April 1): Number of termite colonies swarmed out in March.

A. C. Burrill (March 3): Reticulitermes flavipes Koll. found swarming in basement at Jefferson City.

Kansas. H. R. Bryson (March 20): Flight occurred at Manhattan, later than usual owing to cool weather.

Utah. G. F. Knowlton (March 12): Floors and timbers severely damaged in a large home at Providence.

Nevada. G. G. Schweis (March 5): Reported from Reno and Fernley during February.

Oregon. D. C. Mote (March): R. hesperus Banks found on March 13 at Baker in wood from basement foundation. On March 10 termites reported doing much damage to foundation and floors of a residence built 30 years ago at Cottage Grove.

ANTS (Formicidae)

Virginia. H. G. Walker (March 27): Ants, which appear to be Tetramorium caespitum L., swarming from foundation of a house at Norfolk on March 24.

Georgia. T. L. Bissell (March 29): Colony of Monomorium pharaonis L., with queen, found in an unused glass condenser in a laboratory at Experiment Station on January 29. Ants, which appear to be Solenopsis xyloni McCook, have been destructive in a greenhouse, eating the bark from a young hibiscus plant and also the squares from cotton.

Mississippi. C. Lyle (March 29): Ants reported as annoying in homes in Bolivar and Clay Counties. Specimens of M. pharaonis sent from Harrison County on March 19.

Nebraska. H. D. Tate (February 25): Specimens of Camponotus herculeanus pennsylvanicus Deg. received from Butler County.

Kansas. H. R. Bryson (March 21): Ants in basements of houses reported as common, one report coming from Lyndon and several from Manhattan. Heavy flights of winged ants encountered by R. C. Smith on a motor trip to Bala.

POWDER-POST BEETLES (Lyctus spp.)

New Jersey. E. A. Back (January 26): Specimens of L. planicollis Lec. from mahogany-veneered bookcase in Teaneck received on January 26. (Det. by W. S. Fisher.)

South Carolina. F. Sherman and W. C. Nettles (March 22): Numerous reports of powder-post beetles infesting floors and sleepers underneath received from eastern half of State, especially Charleston.

Mississippi. N. L. Douglass (March 29): Observed injuring walls of a house in Grenada County.

Iowa. C. J. Drake (March 20): Found in large numbers in a house at Clinton. Many of the larger timbers had been badly damaged.

Oregon. J. Davis (February 21): L. brunneus Steph. found in oak floor at Astoria which had been laid 1 month. (Det. by W. J. Chamberlin.)

TAN BARK BORER (Phymatodes variabilis L.)

Massachusetts. A. I. Bourne (March 24): Specimens collected in dwelling house, presumably emerging from stovewood.

RED SPIDERS (Tetranychus spp.)

Nevada. G. G. Schweis (March 5): Caused considerable annoyance to householders during February, owing to little mortality because of mild winter.

MILLIPEDS (Diplopoda)

Oregon. J. Davis (February 21): Found eating wood in a comparatively new house located on river bank in Bend.

BOXELDER BUG (Leptocoris trivittatus Say)

Nebraska. H. D. Tate (March 17): Reported from Dodge, Butler, Antelope, and Madison Counties during the period February 20 to March 15.

Kansas. H. R. Bryson (March 21): Reported as causing annoyance near residences at Manhattan, and as more numerous than usual from Natona, Eldorado, and Washington Counties.

Utah. G. F. Knowlton (March 7): Numerous reports received recently from Logan, Salt Lake City, and Murray. (March 8): Annoying at Willard and Brigham. (March 18): Causing much annoyance in homes and offices at Salt Lake, Brigham, Ogden, and Logan.

A BEETLE (Mezium americanum Cast.)

Massachusetts. A. I. Bourne (March 24): Specimens found near water pipes and around sinks of a dwelling.

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus L.)

Utah. G. F. Knowlton (March 21): Adult specimen found active inside a home at Providence.

DRUG STORE WEEVIL (Stegobium paniceum L.)

California. E. A. Back (March 13): Specimens found infesting books in a library at San Diego.

GERMAN COCKROACH (Blatella germanica L.)

Mississippi. C. Lyle (March 5): Specimens received from Marshall County. Reported from Grenada, Montgomery, and Yalobusha Counties by N. L. Douglass.

Utah. G. F. Knowlton (March): Infesting a home at Logan on March 7, and a store and home at Farmington on March 14.

AMERICAN COCKROACH (Periplaneta americana L.)

Utah. G. F. Knowlton (March 21): Infesting a restaurant at Ogden.

HOUSE CRICKET (Gryllus domesticus L.)

Pennsylvania. E. A. Back (February 14): Reported as abundant on city dump of York Haven last summer and fall, and beginning to invade houses. (February 24): Specimens reported troublesome in a number of residences, getting into hampers of soiled clothing and ruining garments, especially those made of rayon.

Virginia. E. A. Back (January 28): Partially grown specimens received on January 28 from house in Arlington where they were abundant last summer and fall.

CARPET BEETLES (Anthrenus spp.)

- New York. E. A. Back (March 28): Specimens of A. vorax Wtrh. received from Yonkers on February 12, being progeny of culture sent in 1939 from Washington, D. C., by insecticide firm for use in laboratory for testing mothproofing solutions.
- Pennsylvania. E. A. Back (March 26): A. verbasci L. reported from Pittsburgh.
- Ohio. E. A. Back (February 7): Adult of A. scrophulariae L. reported from Cleveland.
- Michigan. E. A. Back (October 13, 1940): Larvae of A. verbasci reported from Detroit.
- California. E. A. Back (February 27): Adults of A. verbasci received from San Carlos.

BLACK CARPET BEETLE (Attagenus nicens Oliv.)

- Pennsylvania. E. A. Back (February 18): Specimens received from thrown silk cones in textile mill in Bethlehem.
- District of Columbia. E. A. Back (March 10): Found badly infesting cracks of parquet flooring in apartment house completed about 3 years ago in Washington.
- Nebraska. H. D. Tate (March 12): Specimens found in an overstuffed sofa in Cedar County.

CLOTHES MOTHS (Tineola spp.)

- District of Columbia. E. A. Back (March 26): Tineola biselliella Hum. found badly infesting cattle-hair insulation on pipes of air-conditioning units in large apartment house completed about 2 years ago.
- Utah. G. F. Knowlton (March 15): Clothes moths have seriously damaged overstuffed furniture coverings, drapes, wool clothing, and stored blankets, and are attacking edges of rugs in a home left closed for several months.

LARDER BEETLES (Dermestes spp.)

- New York. E. A. Back (March 28): D. lardarius L. causing considerable trouble in apartment house late in fall and winter, originating in improperly kept incinerator, according to report of January 31; larvae of D. vulpinus F. taken in abundance from fur pelts on February 6; adults of D. caninus Germ. received on February 18 from apartment house at Long Island, apparently originating in an incinerator.
- Florida. W. E. Dove (October 19): Adults of D. cadaverinus F. found at Panama City. (Det. by H. S. Barber.)

Missouri. E. A. Back (March 28): Specimens of adults and larvae of D. cadaverinus received from two apartments in St. Louis. Few larvae seen but from 8 to 10 adults collected each day.

Utah. G. F. Knowlton (March 8): Larder beetles, D. lardarius causing annoyance and attacking food in a home at Brigham. (March 10): Dermestid larvae are attacking high-grade salted, packaged peanuts at Logan. (March 14): Dermestids attacking prepared cereals in a home cupboard at Smithfield. (March 21): Dermestids found in botanical material at Logan. Caused light injury to student insect collection stored in a school building.

CIGARETTE BEETLE (Lasioderma serricorne F.)

Florida. E. A. Back (March 28): Larvae found causing damage to book bindings in library in Orlando. (Det. by E. A. Back.)

Alabama. J. M. Robinson (March 11): Reported damaging visors of caps at Selma.

BROWN SPIDER BEETLE (Ptinus brunneus Duft.)

Utah. G. F. Knowlton (March 7): Seriously infesting 15 sacks of flour at Heber.

STORED GRAIN INSECTS (Coleoptera)

Illinois. W. P. Flint (March 22): Surviving the winter of 1940-41 in shelled corn are granary weevil, flat grain beetle, foreign grain beetle, fungus beetles (several species), cadelle, Indian-meal moth, Tribolium sp. (greatly reduced), and rice weevil (apparently killed).

Mississippi. C. Lyle (February 19): Specimens of Carpophilus dimidiatus F., Laemophloeus minutus Oliv., and Tribolium castaneum Hbst. found among cottonseed from Pike County.

Iowa. C. J. Drake (March 20): Stored-grain insects are abundant, about 20 species found breeding in shelled corn in the State.

H. E. Jaques (March): T. confusum Duv. moderately abundant in Tama County.

North Dakota. J. A. Munro (March): Laemophloeus minutus Oliv. found in 23 out of 43 samples of grain received from various sections of the State since November 1, 1940. Granary weevil ranked second and mites third.

Nebraska. H. D. Tate (February 26): Specimens of T. confusum were taken from a flour bin in Howard County.

Kansas. H. R. Bryson (March 27): The Australian grain borer (Rhizoperla dominica F.) was reported abundant and doing considerable damage to stored wheat in the western part of the State.

Utah. G. F. Knowlton (March 11): Oryzaephilus surinamensis L. causing much annoyance in flour bin and around sink in a home at Lehi.

California. P. Simmons (March 13): Light infestation of R. dominica found in wheat middlings chiefly infested with Tribolium sp. First occurrence noted in Fresno. (Det. by W. S. Fisher.)

INDIAN-MEAL MOTH (Plodia interpunctella Hbn.)

Iowa. H. E. Jaques (March): Light infestation in Tama County.

Utah. J. S. Stanford and G. F. Knowlton (March 12): Seriously attacking dried sweet corn in a home at Logan. (Det. by F. C. Harnston.)

A BEETLE (Henoticus sp.)

California. P. Simmons (February): Small beetles infesting dried apples in a packing plant at Oakland. (Det. by W. S. Fisher.)

THE MORE IMPORTANT RECORDS FOR APRIL

By the middle of April hatching of the lesser migratory grasshopper was about complete in Yuma County, Ariz. Less than 1 percent of the eggs of this species had hatched by this time in the Panhandle areas of Oklahoma and Texas. No hatching had occurred in the northern half of Kansas.

During the first week in the month Mormon crickets were reported as having hatched in parts of South Dakota, Wyoming, Montana, and Idaho. Egg hatching started in Utah and Nevada at the end of March and on the Pacific coast during the last week in February. In Franklin County, Wash., by the third week in April approximately 80 percent of the crickets were in the sixth instar and populations ran as high as 100 per square yard.

The army cutworm was in destructive numbers over a wide area extending from Montana and Idaho southward to Utah and Colorado and eastward to Nebraska and Kansas. In Oregon the western army cutworm seriously damaged 5,000 acres of grain land and 800 acres of grain.

Damage by May beetles was reported from the East Central States from Ohio to Mississippi. In some places damage to tree foliage was appreciable.

During the second week in April chinch bugs started leaving winter quarters in Indiana. Adults in small grain were observed in Oklahoma during the same week.

Greenbug was reported as doing considerable damage to small grain during the third week in April in Oklahoma and was very abundant in small grain in parts of Kentucky.

Late in the month pea aphid was reported as becoming quite abundant in the coastal and Eastern Shore areas of Maryland and Virginia, and from moderate to severe damage to alfalfa was reported over a wide area extending westward to Illinois and Wisconsin and southward to Mississippi and Oklahoma. Reports were also received from Colorado, Utah, and Oregon.

Clover leaf weevil was generally abundant in the East Central States and in parts of Virginia.

Codling moth passed the winter with but low mortality over the greater part of its range. Pupation was well under way by the third week of April in New York, Indiana, Illinois, Kentucky, Missouri, and Kansas. The first moth of the spring brood was observed on April 14, in Washington, 3 days earlier than last year.

Throughout the New England and Middle Atlantic States tent caterpillar was generally reported, in some places being in destructive numbers.

Various aphids attacking deciduous fruit trees were appearing in moderate to large numbers in the Middle Atlantic, New England, and East Central States. The apple grain aphid began hatching in New York State as early as April 9 and during this same week was hatching in Wisconsin.

Eggs of Comstock's mealybug began hatching in Albemarle County, Va., on April 21, 11 days earlier than last year.

European red mite began hatching in New York State and Pennsylvania during the third week in April. The insect seems to be prevalent from New England westward to Michigan.

Adult plum curculios began leaving hibernation quarters in large numbers during the first week in April in Georgia, the peak of emergence being reached by the middle of the month. The first adult to be taken in Pennsylvania was collected on April 15 and the first in Illinois on April 22.

Citrus aphid was heavily infesting new growth over a considerable area in Florida. The infestation was said to be the heaviest since 1925.

Vegetable weevil was reported as doing some damage throughout the South Atlantic and Gulf States.

Potato tuber moth was reported for the first time in Minnesota. All specimens were in potato storages.

During the third week in the month the first Mexican bean beetle was found in the Norfolk area of Virginia. About the same time the first adult of the bean leaf beetle was found in this area. Southward to Mississippi this species was rather plentiful and damaging beans.

Unusually severe infestations of asparagus beetle were reported from South Carolina and Washington.

Strawberry root weevil was doing severe damage to strawberries in Washington State, and the strawberry weevil was seriously infesting strawberries in Kentucky.

The tobacco flea beetle was severely injuring tobacco plant beds during the third week in April in South Carolina and was more abundant on newly set plants in Florida than usual.

Boll weevils were in flight in Louisiana during the first week in April. They were generally active in hibernation cages over the Cotton Belt during this week.

Spring cankerworms were defoliating orchards in central Oklahoma during the third week in the month. They appeared in outbreak numbers in the vicinity of Dallas, Tex., during the first week in the month.

During the month the elm leaf beetle was generally prevalent throughout New England and southward to Pennsylvania. Adults were particularly troublesome, entering houses.

White pine weevil was generally reported as being abundant throughout New England and New York.

American dog tick began appearing about the middle of April in the South Atlantic States and in the vicinity of Washington, D. C., was heavily infesting dogs by the end of the month. No cases of spotted fever have been reported as yet in the Eastern States.

Screwworm flies are occurring in enormous numbers in southern Texas. Infestation of very young calves is as high as 10 percent in some counties.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

Arizona. B. M. Gaddis and assistants (April 6-12): Melanoplus mexicanus Sauss. is the only species of major importance now present in the crop area of Yuma County. Hatching is about complete, with the stages in development ranging from first instar to adult. First adult was reported to have been observed in the south Gila Valley area of Yuma County on April 8. Populations in alfalfa fields range from less than 1 to 45 per square yard, with concentrations in localized areas of some fields ranging into hundreds per square yard. Damage to alfalfa already is evident in some fields. Populations in the Gila Bend and Arlington districts of western Maricopa County range from less than 1 to more than 5 per square yard. (April 13-19): Hatching of the dominant species, M. mexicanus, is now almost complete in Yuma County and most of them are in the third and fourth instars. Nymphs have become well scattered throughout alfalfa fields. In Maricopa County populations per square yard are very low in most instances.

Kansas.^{1/} (April 13-19): Practically no hatching has occurred in Kansas north and west of Great Bend. The peak of the hatch in this area is not expected to occur, even with favorable weather, prior to May 7. The weather has been more favorable toward egg development in southern Kansas, where M. mexicanus and Aeoloplus turnbullii Thos. have been hatching in very light numbers in the more favored environments during the week. Hatch at present is less than 1 percent complete.

Oklahoma and Texas. (April 13-19): Egg development in the Panhandle areas of Oklahoma and Texas has been favored by weather conditions and M. mexicanus and A. turnbullii were reported to be hatching in very light numbers in favored environments during the week; however, the hatch is less than 1 percent complete. Grasshopper nymphs were reported to be hatching along ditch banks and fence rows adjacent to wheat in Ochiltree and Hansford Counties, Tex. The dominant species observed was Aulocara elliotti Thos. M. mexicanus nymphs were found at only one stop in Ochiltree County. Hatching in these two counties is not general to date and nymphal populations are considerably less than one per square yard. First nymphs were found 15 miles southwest of Perryton, Ochiltree County, on April 18.

Missouri. L. Haseman (April 25): Infestation has returned to normal over the State, with the exception of a few counties in the south-central and southeastern part, where eggs were hatching in sheltered, sunny spots on April 18, according to G. D. Jones.

Utah. G. F. Knowlton et al. (April 5): Three first-instar nymphs were found in alfalfa near Saint George, Washington County, in the southern part of the State. (April 19): A few second- and third-instar grasshoppers, apparently A. elliotti and Melanoplus sp., were observed in

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Where no name is given after the State the report is by B. M. Gaddis and assistants.

South Milford area. (April 23): Two to 3 young grasshoppers per square yard had hatched on a south slope at Mendon, Cache County.

Utah. G. F. Knowlton (April 26): Two recently hatched grasshoppers (Melanoplus sp.) were found on the field margin of alfalfa at Ogden.

MORMON CRICKET (Anabrus simplex Hald.)

South Dakota. B. M. Gaddis (April 13): Began hatching near Wood in Mellette County during the first week in April.

Wyoming. (April 6-12): First-instar crickets were reported in Sheridan County on April 5 and in Hot Springs County on April 12.

Montana. (April 13-19): Reported hatching in Big Horn County.

Idaho. (March 30-April 5): Crickets were reported the week ended April 5 to be hatching only in the Monroe Creek area of Washington County. On April 3, 80 percent of the crickets observed in that locality were in the first instar. Crickets are reported to be hatching in the eastern part of the State in Bingham, Clark, Fremont, and Jefferson Counties. (April 6-12): Crickets are reported to have hatched over the entire State; however, no migrations have been reported and the crickets are generally confined to the egg beds. The average hatch in the eastern part of the State is less than 50 percent completed. (April 13-19): Hatching throughout the State is estimated to be 60 percent complete, with approximately 60 percent of the nymphs in the first instar and 40 percent in the second. The generally cool and stormy weather apparently has had no adverse influence upon the emerged crickets. For the most part they are remaining on the egg beds, with the exception of 1 small band in Clark County, averaging 50 crickets per square yard, which was reported to have migrated into an alfalfa field. First cricket hatches are reported for several of the counties in the State as follows: Bingham County, April 3; Jefferson County, March 29; Clark County, April 1; and Fremont County, April 7.

Utah. G. F. Knowlton et al. (March 31): Mormon crickets are hatching out in considerable numbers on egg beds on Lookout Pass and in a few other places in Utah and Juab Counties. A few are now in the second instar. (April 4): Approximately 10 percent of the eggs have hatched at Silver City on south slopes and 50 percent at Knight's Tunnel foothill areas, in Utah County. Approximately 55 percent have hatched at Lookout Point, in Tooele County. (April 12): Control operations began on hatching grounds near Elberta, in Utah County, on April 8 and at Lookout Pass, in Tooele County, on April 9, but were discontinued on April 10 because of weather conditions. Cool weather retarded hatching. (April 26): First-instar larvae are abundant at lower elevations near Eureka, in Juab County. Eggs on higher areas nearby, are still unhatched. Approximately 90 percent of the young crickets dusted in the Lookout Pass area during

the preceding week were killed. First- and second-instar crickets are being dusted in foothill areas south of Elberta, in Utah County. A few third-instar nymphs now are found in the counties just mentioned.

Nevada. B. M. Gaddis (April 6-12): A general storm over the cricket-infested area of the State retarded cricket development. Hatching of crickets in Humboldt County is reported complete, except at the higher elevations, and many crickets are in the second and third instars. (April 13-19): In the area adjacent to Elko, in Elko County, it was noted that crickets had developed from first to second instars, even with the unfavorable weather which prevailed. Apparently little cricket mortality resulted from the low temperatures and heavy rains.

Oregon. (April 6-12): Mormon crickets range from first to sixth instars, most of them being in the fourth instar, in Wasco and Jefferson Counties and from first to fourth instars in Baker, Gilliam, Sherman, and Umatilla Counties. (April 13-19): Fifth-instar crickets are now appearing at the lower elevations in Baker County. In Gilliam County they are in fourth to seventh instars. In Sherman County they are in third and fourth instars, with 85 percent in the fourth. From second to fourth instars are reported in Wasco and Jefferson Counties.

Washington. L. G. Smith (April 22): Mormon crickets started to hatch on February 24 in the Goodnoe Hills area of Klickitat County and the first week in March in Franklin County.

B. M. Gaddis (March 30-April 5): Hatch in Franklin County was 95 percent completed at the close of the week, with the crickets ranging from second to fifth instars. (April 6-12): Crickets in Franklin County range from the second to sixth instars, with populations of from 5 to 90 per square yard. (April 13-19): Crickets in Franklin County range from third to seventh instars, with approximately 80 percent in the sixth instar. Populations range from 10 to 100 per square yard.

COULEE CRICKET (Peranabrus scabricollis Thos.)

Oregon. B. M. Gaddis (April 13-19): Adults are reported in Wasco and Jefferson Counties.

CUTWORMS (Phalaenidae)

Georgia. T. L. Bissell (April 29): Cutworms were reported as killing tomato plants in Griffin.

Mississippi. C. Lyle (April 25): Damage reported from Attala and Tate Counties.

Missouri. L. Haseman (April 25): Moderately abundant during month throughout central part of the State; damaging a few garden crops.

South Carolina. C. F. Rainwater (April 26): Found injuring soybeans at Saint Matthews, Calhoun County.

Iowa. H. E. Jaques (April): Light in scattered counties in the southern part of the State.

Kansas. H. R. Bryson (April 12): Agrotis orthogonia Morr. was reported as causing injury to wheat in the vicinity of Hays.

Oklahoma. F. A. Fenton (April 25): The pale western cutworm is attacking wheat in Texas and Cimarron Counties.

C. F. Stiles (May 1): The pale western cutworm is generally distributed throughout the western half of Beaver and Texas Counties. Some fields have been damaged severely. In 1 field of 160 acres at least 60 percent of the wheat has been killed, worms occurring at the rate of 6 per linear foot of drill row.

Texas. R. K. Fletcher (April 14): A. orthogonia reported from Hansford County.

Utah. G. F. Knowlton (April 4): Cutworm injury severe in North Creek and South Creek areas, near Beaver. (April 14): Rather abundant in some alfalfa fields and plowed land at North Logan and Providence in Cache County. (April 23): New outbreaks are occurring in alfalfa and wheat fields at Fountain Green and near Mount Pleasant. (April 24): Abundant in some home gardens at Logan.

W. E. Peay (April 26): Cutworms are severe on 100 acres of alfalfa and grain at Penrose, where they did considerable damage last year.

Washington. M. C. Lane (April 3): Damage by Abagrotis barnesi Benj. serious in several commercial Concord grape vineyards at Kennewick, the damage consisting of holes in buds.

Oregon. B. G. Thompson (April 8): The western army cutworm (Chorizagrotis agrestis Grote) infested an area in Harney County containing 5,000 acres of sagebrush pasture and 800 acres of grain. Thirty acres of crested wheatgrass was destroyed, with the heaviest damage occurring in rye fields and wheat fields. From 20 to 30 larvae per square foot observed in heavier concentrations.

California. R. E. Campbell (March): Peridroma margaritosa Haw. collected on sugar beets east of Brawley and on watermelons east of Calexico on March 11 and 12, respectively. Feltia annexa Treit. collected on sugar beets south of Brawley on March 11. Agrotis ypsilon Rott. collected on sugar beets south of Holtville, and east of El Centro on March 11.

L. G. Jones (April 15): Specimens of P. margaritosa and A. ypsilon were received from Sacramento, with report that they were damaging young alfalfa, flax, and sugar beets. (Det. by J. F. G. Clarke.)

ARMY CUTWORM (Chorizagrotis auxiliaris Grote)

Nebraska. H. D. Tate (April 16): Reported as attacking winter wheat in Banner County on March 17 and Dundy and Hitchcock Counties on March 19, and as damaging pasture in Hayes County on March 24.

Kansas. B. M. Gaddis (March 30-April 5): Infestations were reported in the following counties during the week: Mead, one case reported; Edwards, a general infestation confined to grasslands from which the worms were moving into crops; Rush, a light, scattered infestation; Ellis, a serious general infestation. (April 13-19): Cool and rainy weather during the last 3 weeks has retarded cutworm development and feeding and has permitted rapid growth of winter wheat and, as a result, army cutworms have done comparatively little damage. Some damage is reported in areas where alfalfa is the principal crop and complete destruction of several fields of new seedlings is reported in Stafford and Reno Counties.

Montana. H. B. Mills (April 4): Quite abundant but spotted on wheat around Carbon and Yellowstone. Last general outbreak occurred in 1931 but some injury was sustained in 1937.

Wyoming. B. M. Gaddis (April 13-19): Army cutworm infestations are reported in Campbell and Goshen Counties; severity of infestation has not been determined, owing to weather conditions.

Colorado. S. C. McCampbell (March): Heavy infestations reported throughout the month in Larimer, Morgan, Washington, Adams, Jefferson, Yuma, Weld, and Denver Counties, in the northeastern section of the State. In most cases the larvae are moving into wheatfields from adjacent sod land.

B. M. Gaddis. (March 30-April 5): Heavy infestations in pasture and moderate infestations in wheat in an area southeast of Peetz, Logan County. Light localized infestations were found in pasture land in Phillips and Sedgwick Counties and in the sandhills north of Wray, in Yuma County. A moderate infestation in winter wheat and range land was found south of Eckley, in Yuma County. (April 13-19): Surveys were made during the week in Weld, Larimer, Morgan, Washington, Logan, Adams, and Arapahoe Counties. Army cutworms were found at most stops made in the aforementioned counties, but in only a few instances was there a heavy crop damage and this was chiefly to winter wheat. One supervisor estimated that throughout this area, approximately 40 percent of the worms have reached maturity and that pupation of many will occur within the next 7 to 10 days. The heaviest damage observed during the last few days occurred near Gary, Washington County. In 2 fields almost total destruction had occurred for approximately 3 rods into the fields. At a point 3 rods within the fields, cutworms averaged 14 and 9 per square foot, respectively. An infestation of moderate intensity located in the foothills west of Fort Collins was found to have been reduced by baiting to a light infestation. Light

to severe infestations were found for 1 mile west and 18 miles east of Kuner, in Weld County. Considerable damage was observed to spring and winter wheat adjacent to range land northwest of Fort Morgan in Morgan County, but most of the wheat, except late fall and spring plantings, is expected to make satisfactory recovery. Army cutworm infestations are still threatening to late fall and spring grain plantings in southeastern Weld and northeastern Adams Counties.

C. R. Jones (April 24): Tremendous outbreak of army cutworm has occurred throughout various parts of the State, and considerable damage is being done in wheat and alfalfa fields.

Idaho. F. H. Shirck (April 9): C. auxiliaris found severely damaging a stand of fall-sown rutabagas at Parma. (Det. by C. Heinrich.)

R. A. Fisher (April 25): Army cutworms were attacking grain moderately to severely in Power County.

Utah. G. F. Knowlton (April 4): Army cutworm is heavily infesting more than 2,200 acres, mostly wheat and alfalfa, in Beaver County. (April 7): Injuring crops at Aurora, Salina, and Redmond, in Sevier County, and at Price, in Carbon County, and heavily infesting 800 acres of wheat and alfalfa fields and 200 acres of adjoining range land in Piute County. (April 12): Approximately 2,000 acres of range and 200 acres of crop land are also infested in Carbon County and an equal acreage in Grand County. In San Juan County 400 acres of small-grain and stubble land are infested south of Blanding. Large flocks of ravens are feeding actively upon these insects at Blanding and in several localities of Grand County. Some injury is occurring to crops in Emery County. (April 19): Causing severe injury to alfalfa south of Monroe, and control measures are being used in Sanpete County. Injury most general in foothill areas. Young alfalfa stands have been killed out in some parts of Milford Valley and serious injury has occurred to older patches, especially in the margins. (April 23): Specimens submitted from Logan on April 16, taken from two extensive outbreaks occurring in the State. (Det. by C. Heinrich.)

ARMYWORM (Cirphis unipuncta Haw.)

Illinois. W. P. Flint (April 22): Moderate flights of adults occurred on April 14, and have appeared on warm nights since that date.

Missouri. L. Haseman (April 25): Moths quite numerous since April 15, visiting fruit blossoms on warm nights, in central part of State. Infestations in oats and lespedeza in southwestern Missouri on April 23 reported by W. W. Smith.

FALL ARMYWORM (Laphygma frugiperda A. & S.)

Florida. J. R. Watson (April 23): First report for season sent in from Jacksonville. Young were very small.

WHITE-LINED SPHINX (Sphinx lineata F.)

Arizona. C. K. Fisher (April 10): Larvae, many apparently full grown, were numerous on unidentified desert plants east of Gila Bend. Display of flowering desert vegetation reported as being finer than at any time since 1902.

BELLA MOTH (Utetheisa bella L.)

South Carolina. F. Sherman (April 25): Caterpillar (perhaps U. bella) prevalent on corn, vetch, and garden vegetables, mainly in central part of the State.

WIREWORMS (Elateridae)

Washington. L. G. Smith (April 9): Click beetles were observed causing some damage to grape buds in the Kennewick district of Benton County. These beetles seem to rasp the surface at the base of the buds and on the opening leaves that have not quite separated. Apparently they then feed on the sap that collects on the surface.

E. W. Jones (March): The first adult of the Pacific coast wireworm (Limonius canus Lec.) emerged in the Walla Walla Valley March 16. In field cages about 54 percent had emerged by March 31. About 90 percent of the adults survived the winter. (April 1): L. californicus Mann. found feeding on underground stem of lettuce plants and killing them at Walla Walla--first record of damage.

MAY BEETLES (Phyllophaga spp.)

Tennessee. G. M. Bentley (April 21): Different species of May beetles prevalent in counties of western Tennessee.

Mississippi. C. Lytle (April 25): Beetles reported as damaging oak trees in Chickasaw County and pecan trees in Holmes and Hinds Counties; also abundant at lights in Tate County on April 19. Specimens of P. arkansana Schffr., P. micans Knoch, and P. tristis F., were collected at lights in Stone County. P. arkansana was abundant.

Ohio. N. F. Howard (April 17): Specimens of P. prunina Lec. found injuring cabbage at South Point on April 17. (Det. by W. H. Anderson.)

Kentucky. W. A. Price (April 25): Brood A began emerging on April 17 at Lexington. Slight stripping of pin oak foliage occurred the night of April 19.

Michigan. R. Hutson (April 22): P. tristis adults found in large numbers in a nursery at Wellston.

Minnesota. A. A. Granovsky (April 15): White grubs are becoming numerous. Brood "C" will be in second year of development and appears to be reaching the same economic importance as Brood "A." This is especially

true of P. rugosa (Melsh.) and P. fusca (Fröel.). Owing to favorable ecological conditions during the last few years, the brood "C" gained in greater economic condition and in some areas became of greater importance than brood "A." In this connection P. rugosa surpassed P. fusca in numerical abundance, reversing the order of abundance. During the same period P. tristis succeeded in building up its populations also, as compared with those of 10 years ago.

Iowa. H. E. Jaques (April): Light infestation of white grubs in scattered counties in the State.

Utah. G. F. Knowlton and F. C. Hornston (April 6): White grubs reported as causing serious injury to lawns at Rockville. (April 11): Seriously damaged many spots in a golf course south of Salt Lake City, and reported injuring many lawns in this locality.

GREEN JUNE BEETLE (Cotinis nitida L.)

South Carolina. N. Allen et al. (April 17): Several tobacco plant beds severely injured by larvae in Florence and Marion Counties.

BEETLES (Scarabaeidae)

Connecticut. J. P. Johnson (April 21): Larvae of the Japanese beetle (Ponillia japonica Newm.), the oriental beetle (Anomala orientalis Wtrh.), and the Asiatic garden beetle (Autoserica castanea Arrow), ascended from hibernation quarters up into the roots of turf at New Haven during the week of April 13.

BUMBLE FLOWER BEETLE (Euphoria inda L.)

Virginia. L. A. Hetrick (April 8): Adults flying in abundance near soil in pine woods of King and Queen County.

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica soror Lec.)

California. A. E. Michelbacher (April 22): Adults were scarce on April 18 in the San Joaquin Valley, less than 1 on the average being collected per 100 net sweeps. More abundant in area adjacent to the San Francisco Bay, where about 4 were collected per 100 sweeps of the net.

A COREID (Corizus indentatus Hambl.)

Washington. C. E. Woodworth (March 1): Found in large numbers on crested wheatgrass near Walla Walla.

COMMON RED SPIDER (Tetranychus telarius L.)

Georgia. T. L. Bissell (April 24): Injury on red raspberry beginning at Clarkston. Vetch also infested.

CEREAL AND FORAGE - CROP INSECTS

WHEAT

CHINCH BUG (Blissus leucopterus Say)

Indiana. C. Benton (April 25): Spring flight from winter quarters occurred in the vicinity of La Fayette on April 10. Winter wheatfields show an infestation of less than one bug per foot of drill row. Many are still in bunchgrass or dispersed into adjacent cover.

Illinois. W. P. Flint (April 22): No noticeable flight from hibernating quarters as yet. Heavy rains of last week have had no effect in reducing numbers.

Iowa. H. E. Jaques (April): Very light in a few counties in the southeastern part of the State, and light to moderate in many counties in the southwestern part.

Missouri. L. Haseman (April 25): No evidence of spring flight from winter quarters in central part of State and no reports of flights received from other parts.

Nebraska. H. D. Tate (April 16): A limited survey conducted a few weeks ago indicated that winter mortality has been very low.

Kansas. H. R. Bryson. (April): Bugs were flying in large numbers during the week of April 21 to 26. Reports have been received from southeastern Kansas, Effingham in the northeast, Manhattan, and Wichita. The bugs overwintered successfully and threaten to become a menace over the eastern half of the State. Wheat in the vicinity of Manhattan has attained such rank growth that the fields are not very attractive to the bugs.

Oklahoma. R. G. Dahms (April 23): First bugs observed in small grains on April 9 and by April 16 approximately 95 percent had migrated from winter quarters. Spring migration occurred about 2 weeks later than normal. First eggs observed on April 21. Infestation in small grain is more severe than normal, counts made in 50 linear feet of drilled row made on April 16 showing an average number of bugs per foot as follows: Spring-planted barley 22.9, winter-planted barley 8.4, spring-planted oats 1.2, winter-planted oats 0.4, and winter wheat 2.1.

GREEN BUG (Toxoptera graminum Rond.)

Kentucky. W. A. Price (April 25): Green bugs very abundant generally over the State in small grains, and grasses.

Oklahoma. R. G. Dahms (April 23): Reported as doing damage in Caddo, Comanche, Cotton, and Jefferson Counties, southwestern section, during the early part of April. All of the injury personally observed occurred in volunteer winter oats.

F. A. Fenton (April 25): Reported as causing considerable damage to barley, volunteer oats, and some wheat in Payne County, in the central part of the State, and Jefferson, Cotton, and Comanche Counties, in the southwestern part. Infestation on decline, owing to recent rains.

A MITE (Tetranychina tritici Ewing)

Oklahoma. R. G. Dahms (April 23): Reported on wheat from Comanche and Tillman Counties, southwestern Oklahoma. Infestation is very light, as compared with the last 3 years.

A MITE (Tetranychia sp.)

Oregon. D. C. Mote (April 23): Destroyed 140 acres of wheat foliage at Lakeview, south-central Oregon. Migrating toward a 1,000-acre wheat-field.

CORN

CORN EAR WORM (Heliothis armigera Hbn.)

Georgia. T. L. Bissell (April 23): Two moths caught at light trap at Experiment, central Georgia.

EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)

Virginia. H. G. Walker and L. D. Anderson (April 25): Examination of larvae at Backbay, Princess Anne County, indicated that no pupation had occurred on April 7, but that about 6 percent had pupated by April 15, and 39 percent by April 22.

CORN FLEA BEETLE (Chaetocnema pulicaria Melsh.)

South Carolina. W. C. Nettles (April 25): Flea beetle, identified as probably C. pulicaria, is injuring corn in Allendale County.

O. L. Cartwright (May 1): Considerable injury caused in sweet-corn plots at Clemson, Oconee County.

Mississippi. M. L. Grimes (April 15): Injury to corn is scattered in Neshoba County.

ALFALFA

PEA APHID (Macrosiphum pisi Kltb.)

New York. N. Y. State Coll. Agr. News Letter (April 28): First observed April 21, on Long Island, on pea seedlings, alfalfa, and red clover. First generation of winged migrants found on peas. Apparently evident that they are more prevalent than in the last 2 seasons.

- Virginia. H. G. Walker and L. D. Anderson (April 25): Becoming very abundant in some fields of alfalfa in the Norfolk area.
- South Carolina. C. F. Rainwater (April 26): Complaints have been received from Florence County of aphid injury to garden peas.
- Tennessee. G. M. Bentley (April 24): Alfalfa field at Bell Buckle, Bedford Co., is being damaged. Infestation occurs in spots from 5 to 8 feet in diameter, causing foliage to turn yellow and drop.
- Illinois. R. A. Blanchard and R. O. Snelling (April 24): Severe to moderate damage to first crop of alfalfa was observed to be general in the southwestern part of the State.
- Kentucky. W. A. Price (April 25): Unusually abundant on alfalfa, the latter part of April, in the Bluegrass Region.
- Wisconsin. J. E. Dudley, Jr. (April 15): First hatching probably occurred on April 10 to 12. Eighteen first-stage nymphs were found on alfalfa in 15 minutes on April 14 in Madison and its environs.
- Missouri. L. Haseman (April 25): Rather serious infestations in many alfalfa fields reported, particularly from the southeastern part of the State.
- Mississippi. C. Lyle, et al. (April 25): Injury to English and winter peas by aphids, probably this species, has been reported from Attala County, from the southeastern area, from the Meridian area, from the Poplarville section, and from Hinds and Oktibbeha Counties.
- Arkansas. D. Isely (April 25): Unusually abundant on alfalfa and vetch, particularly in the northeastern part of the State.
- Kansas. H. R. Bryson (April 12): Has been fairly abundant in most alfalfa-growing areas. Although weather conditions have favored the growth of alfalfa, the aphids have caused some injury.
- Oklahoma. F. A. Fenton (April 25): Damage to alfalfa, reported from Muskogee, Payne, Cimarron, and Garfield Counties, indicates that the insect is widespread in the State. In Payne County the infestation was checked by a fungus.
- R. G. Dahms (April 23): Light infestations observed in several alfalfa fields in Comanche County.
- Colorado. C. R. Jones (April 24): Infestation very serious in some alfalfa and grainfields.

Utah. G. F. Knowlton, et al. (April 5): From 20 to 35 aphids per semi-circular sweep were taken in alfalfa fields at Saint George, and from 7 to 10 per sweep at Leeds, some of the latter being second-generation alates. Nysius sp. and syrphid larvae are proving upon them in moderate abundance. (April 9): In second generation and moderately abundant on alfalfa at Rockville, Kanab, Greenriver, and Moab. (April 20): Nymphs, ranging in size from recently hatched to two-thirds grown, are present in most alfalfa fields examined in Weber, Box Elder, and Cache Counties; also present on sweetclover. (April 22): From 1 to 15 aphids were taken in each 10 sweeps in Cache County today in alfalfa which was from 3 to $4\frac{1}{2}$ inches tall. Average was about 4 per 10 sweeps.

Oregon. K. W. Gray (April 1): Large numbers of winged forms appeared about April 1 and infested late-sown fall legumes and cannery peas in the Willamette Valley.

PLANT BUGS (Lygus spp.)

Utah. G. F. Knowlton (April 20): Lygus elisus Van D. and L. elisus hesperus Knight are moderately abundant in alfalfa at Logan, Richmond, and Smithfield.

ALFALFA WEEVIL (Hypera pestica Gyll.)

Utah. G. F. Knowlton and F. C. Harmston (April 8): Four larvae were collected in one sweep upon alfalfa at Saint George, in the southern part of the State. (April 26): Adults moderately abundant and mating in several fields examined in Cache, Box Elder, Weber, Tooele, and Utah Counties; most abundant at Genola, Utah County.

California. A. E. Michelbacher (April 22): In the infested region of the San Joaquin Valley on April 18 the number of larvae collected per 100 sweeps for the different fields ranged from 0 to 611. The larval population was much less than last year, and very little damage was done to the first crop. Injury that might be considered of an economic nature was limited to 2 fields. Almost all of the adults collected in the San Joaquin Valley on April 18 had recently emerged. Only a few larvae were collected in the alfalfa fields in the region adjacent to the San Francisco Bay, the number for the different fields ranging from 4 to 56. Populations encountered this year are the smallest found since the weevil was first discovered in the area in 1932. Parasitization in this district by Bathyplectes curculionis Thoms. on April 6 was 66 percent, as compared with 58 percent on April 7 in the San Joaquin Valley.

CLOVER

CLOVER LEAF WEEVIL (Hypera punctata F.)

Virginia. S. B. Fenne (April 24): Heavily infesting a 15-acre field of red clover in Smyth County in the southwestern part of the State.

Ohio. T. H. Parks (April 29): Larvae are causing a very ragged appearance of red clover on several farms in Butler County, in southwestern Ohio.

Indiana. J. J. Davis (April 23): Reported as damaging clover at Columbus, south of the central part of the State, on April 21. Climatic conditions are unfavorable for the fungus disease which normally holds the insect in check.

Illinois. J. H. Bigger (April 23): Considerable feeding on all clovers and alfalfa in central part of the State, and most severely on red clover and one variety of sweetclover.

Kentucky. W. A. Price (April 25): Larvae very abundant on red clover in the Bluegrass Region during April. A fungus disease killed many of them late in the month.

Missouri. L. Haseman (April 25): Reported as extremely abundant in clover and alfalfa fields from various sections of the State, and as stripping most of the young growth in some fields. Weather conditions are ideal for heavy feeding by the larva.

Idaho. R. A. Fisher (April 25): One field of white Dutch clover in Nez Perce County, northern Idaho, was almost completely defoliated.

A WEEVIL (Sitona cylindricollis Fahraeus)

Illinois. J. H. Bigger (April 25): The weevil is feeding heavily on sweetclover plants wherever they occur north of U. S. Route 30. Other clovers and alfalfa not damaged, even when in mixed plantings.

SOYBEAN

AN APHID (Trifidaphis phaseoli Pass.)

South Carolina. C. F. Rainwater (April 26): White cotton root aphid is very numerous on soybeans in Florence County, but apparently not causing much injury.

COWPEA

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

Georgia. T. L. Bissell (April 23): Adults are beginning to emerge from hibernation to trap cowpea plants at Experiment. One was found on April 16, one on April 21, and four on April 23.

Florida. J. R. Watson (April 23): Specimen sent in from Clearwater with report that it was feeding on young citrus leaves.

GRASS

A BILLBUG (Calendra phoenicilis Chitt.)

Arizona. R. A. Flock (April 18): Severe damage at Benson, southeastern Arizona. Probably the most serious pest of Bermuda grass at lower elevations, such as Tucson and Phoenix.

SUGARCANE

SUGARCANE BORER (Diatraea saccharalis F.)

Louisiana. W. A. Douglas (April 22): The number of larvae surviving the winter in the rice section is very small.

J. W. Ingram and E. K. Bynum (April 25): First-generation eggs are much more numerous than last year.

SUGARCANE BEETLE (Euctheola rugiceps Lec.)

Louisiana. J. W. Ingram (April 25): Injury up to the present time is the lowest on record while in previous years beetle injury had almost reached its maximum by this date.

RICE

RICE STINKBUG (Solubea lugens F.)

Louisiana. W. A. Douglas (April 22): Bugs are scarce in the rice territory that was flooded last August.

F R U I T I N S E C T S

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

New York. N. Y. State Coll. Agr. News Letter (April 14): More abundant this spring than usual in Orleans County, western New York.

Georgia. O. I. Snapp (April 18): Very little mortality during winter at Fort Valley, central Georgia. Percentage of live scale in peach orchards is higher than average, and general infestation is heavier than usual.

Mississippi. C. Lyle, et al. (April 25): Rather heavy infestations on unsprayed fruit trees were reported from the northeastern section and the Jackson and Meridian districts.

Illinois. S. C. Chandler (April 22): Twenty-five percent survived winter in latitude of Carbondale, southern Illinois.

Michigan. R. Hutson (April 22): Careful survey disclosed no infestation in regularly sprayed orchards.

Minnesota. A. G. Ruggles and C. E. Mickel (April 16): Moderately abundant.

BUFFALO TREEHOPPER (Ceresa bubalus F.)

Wisconsin. C. L. Fluke (April 25): Becoming more numerous and doing considerable injury to both apple and cherry in Door County.

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

New York. D. W. Hamilton (April 21): At Poughkeepsie larvae overwintering under paper bands around apple-tree trunks were 45 percent pupated today, the earliest date they have been found in this locality in the last 6 years, and 15 days earlier than last season.

Georgia. W. H. Clarke and C. H. Alden (April 17): First emergence from overwintered larvae noted in insectary at Cornelia, northeastern Georgia, on April 17.

Indiana. L. F. Steiner (April 24): Winter mortality in southern part of State was less than 3 percent, well below normal. Population appears much larger than normal. Examinations in apple orchards by S. A. Summerland at Vincennes indicated that very little, if any, pupation occurred prior to April 7, but that 25 percent of the brood had pupated by April 15 and 57 percent by April 22.

Illinois. W. P. Flint (April 22): Approximately one-fourth of the overwintered larvae had pupated by April 20 in the region.

Illinois. S. C. Chandler (April 22): In southern and western parts of the State the winter mortality of larvae ranged from 5 to 10 percent. The first pupation occurred at Carbondale on February 12.

Kentucky. W. A. Price (April 25): Heavy carry-over of larvae, the counts at Lexington in bands indicating a mortality of less than 10 percent. Fifteen to 20 percent had pupated by April 24.

Minnesota. H. P. Nicholson (April): One adult caught at light on April 2 at Saint Paul.

Missouri. L. Haseman (April 25): Heavy carry-over in orchards throughout the State generally. Approximately 8 percent of the larvae had pupated on April 23 in the southwestern part of the State.

Missouri and Kansas. H. Baker (April 25): Winter mortality of larvae unusually low in northeastern Kansas and northwestern Missouri. Checks on apple orchards indicated that 8 percent of the hibernating larvae pupated by April 14 and nearly 30 percent by April 24.

Utah. C. J. Sorenson (April 19): Weather conditions generally favorable for development. A few pupae were found on April 11 in apple orchard

at Orem, central Utah.

Washington. C. C. Alexander (April 14): First moths observed today at Yakima, 3 days earlier than last year.

EASTERN TENT CATERPILLAR (Malacosoma americana F.)

Maine. F. H. Lathrop (April 21): Observed to have hatched on wild cherry and apple on April 21 at Monmouth, several days earlier than last year. Eggs probably hatched during the week ended April 19.

New Hampshire. J. G. Conklin (April 17): Hatching observed today in southern part of State.

Vermont. H. L. Bailey (April 30): A few tents were showing up on April 22. Infestation apparently light and scattered throughout the State.

Massachusetts. A. I. Bourne (April 23): Hatched during latter part of week ended April 19. Young caterpillars were constructing tents on April 20.

Massachusetts. J. V. Schaffner, Jr. (April 15): Observed hatching today at Weston, Middlesex County, in the eastern part of the State. A few caterpillars had left egg cluster and were feeding on leaf buds of wild cherry.

Connecticut. P. Wallace (April 23): First tent observed on wild black cherry at Hamden on April 17. More common than last year and abundant in southwestern part of State.

E. P. Felt (April 23): Tents at Stamford, Fairfield County, in extreme southwestern part of State, have a diameter of approximately 2 inches. Probable defoliation of groups of wild cherries and severe damage to apple trees in some places is expected.

J. V. Schaffner, Jr. (April 19): Tents common in some localities in New Haven County.

New York. E. P. Felt (April 23): From moderately to possibly extremely abundant in much of the area within 100 miles of New York City.

J. V. Schaffner (April 14): Hatching was observed by S. F. Potts near Albany and in Norwich, Chenango County, on April 14.

N. Y. State Coll. Agr. News Letter (April 21): In eastern New York tent caterpillars were first observed on April 14. Egg masses are numerous. In Cayuga County tents were seen on April 22.

New Jersey. R. J. Kowal (April 16): Numerous colonies observed feeding in Somerset County on bursting buds of apple and wild cherry trees.

Longest axis of webs was about 2 inches. More advanced colonies seen in sections of Monmouth County on April 17.

F. A. Soraci (April 14): Tents observed in central and southern parts of the State.

Pennsylvania. T. L. Guyton (April 23): Present in rather heavy numbers on apple and wild cherry at Milford, Dingmans Ferry, in Pike County; East Stroudsburg and Kresgeville, in Monroe County; Weissport, in Carbon County; Snyders and McKeansburg, in Schuylkill County; Hamburg and Shartlesville, in Berks County; and several points in Lebanon and Dauphin Counties, all in eastern Pennsylvania.

G. B. Slesman (April 21): Very prevalent over entire Philadelphia area on wild cherry and apple, and appears to be much heavier than in previous years. Wild cherries have been completely defoliated in some areas.

Virginia. L. A. Hetrick (April 10): Small webs and first-instar larvae observed on wild cherry in King William County.

A. M. Woodside (April 18): Nests abundant in Augusta and Albemarle Counties, the eggs having hatched only a few days ago.

R. L. Taylor (April 25): Egg masses hatching at Williamsburg, in James City County, and in York County, in the southeastern part of the State. Some tents are already well advanced and larvae are about 3 centimeters long. Ornamental apple trees on the campus moderately damaged.

South Carolina. F. Sherman and W. C. Nettles (April 25): In evidence on apple and chokecherry, but perhaps less than usual.

Georgia. O. I. Snapp (April 13): At Fort Valley colonies were noted in the fork of limbs of wild cherry today. Infestation appears to be heavier than usual.

W. H. Clarke (April 17): Newly hatched larvae now making tents at the base of forest-tree limbs at Cornelia, in northeastern Georgia.

Tennessee. G. M. Bentley (April 17): Occurring in rather large numbers on wild cherry and apple trees, especially in counties in western part of the State.

W. F. Turner (April 21): Very abundant on wild black cherry and occasionally on peach in Hamilton County.

Mississippi. C. Lyle, et al. (April 25): Injury to wild cherry and to some extent to peach and wild crab apple has been observed in Choctaw, Clay, and Oktibbeha Counties. Several colonies on peach and plum were seen in Holmes County. Reported as injuring Cape-jasmine in Oktibbeha County and wild cherry in Lafayette County.

Kentucky. W. A. Price (April 25): Reported as being unusually abundant the middle of April in several western apple orchards.

Oklahoma. F. A. Fenton (April 25): Unusually abundant on plum, especially wild plum, over the State generally.

FRUIT TREE LEAF ROLLER (Cacoecia argyrospila Walk.)

New York. N. Y. State Coll. Agr. News Letter (April): In the lower Hudson River Valley larvae were first seen on April 20. In western New York egg masses are very numerous in many orchards. A few larvae were found on April 23 and 24 in Cayuga County.

Illinois. W. P. Flint (April 22): Eggs began hatching in the western part of the State on April 18, and hatch was nearly complete by April 21. Larvae have been reduced to some extent by adverse weather conditions.

Illinois. S. C. Chandler (April 22): Very rapid hatch of eggs is taking place in the southern and western parts of the State, apparently starting about the time of the first apple blooming.

Wisconsin. C. L. Fluke (April 25): Thorough search in Door County failed to reveal any leaf roller eggs.

Missouri. L. Haseman (April 25): Nearly all eggs had hatched before April 20 in the central part of the State, and young larvae are beginning to feed on leaves of the opening buds.

PISTOL CASEBEARER (Coleophora malivorella Riley)

Pennsylvania. H. M. Steiner (April 28): Larvae began leaving hibernating quarters on April 1 in the vicinity of Arendtsville, in southern Pennsylvania. Most of them were feeding on apple from April 10 to 20. Feeding was interrupted by molting from April 17 to 27.

EYE-SPOTTED BUDMOTH (Spilonota ocellana D. & S.)

New York. N. Y. State Coll. Agr. News Letter (April): In eastern New York larvae were observed in the buds on April 16. By the last of the month they were observed in considerable numbers. In western New York first active larva was found on April 15 in Wayne County. By the last of the month they were doing considerable damage in some orchards.

F. Z. Hartzell (April 25): High winter survival in Wayne, Monroe, and Orleans Counties. Indications are that infestation will be very serious in possibly one-half of the apple orchard acreage.

SPOTTED TENTIFORM LEAFMINER (Lithocolletes blancardella F.)

Pennsylvania. H. M. Steiner (April 28): Adults emerged rapidly from pupae in dead leaves during the week of April 6-12, in the vicinity of Arendtsville, in the southern part of the State, and were numerous on apple trees in the observed orchards when early leafing varieties were in the green-tip stage on April 10.

APHIDS (Aphididae)

New Hampshire. J. G. Conklin (April 8): Apple aphids began hatching today in Durham, southeastern part of the State.

Massachusetts. A. I. Bourne (April 23): Young orchard plant lice were found hatching around April 12, but actual first appearance date was a day or two earlier, because aphids were out in abundance.

Connecticut. P. Garman (April 24): Anuraphis roseus Baker and A. pomi Deg. are scarce on apple trees.

New York. F. Z. Hartzell (April 25): At Geneva green apple aphids, rosy apple aphids, and grain aphids (Rhopalosiphum prunifoliae Fitch) have hatched and are moderately abundant. Percentage of rosy aphids runs from 10 to 20 percent, which is quite high.

N. Y. State Coll. Agr. News Letter (April): Aphids are hatching in the lower Hudson River Valley, the grain aphid having been noted as early as April 9 and the green aphid and the rosy aphid by the middle of the month. They are occurring in moderate abundance, the grain aphid being the predominant species. At Ithaca the grain and green species were first reported on April 10 and the rosy aphid was observed near the lake on April 17. Aphids are moderately abundant, but very considerably from orchard to orchard.

Virginia. A. M. Woodside (April 18): Light infestation generally. First eggs of A. roseus hatched about April 8 in Augusta County.

W. S. Hough (April 23): In northern Virginia A. roseus and R. prunifoliae were numerous in some orchards during first half of April, but at present it appears that natural enemies will eliminate or greatly reduce their numbers so that commercial damage will be improbable.

Pennsylvania. H. M. Steiner (April 28): Apple aphids are scarce in the vicinity of Arendtsville. Syrphid flies and ladybird beetles were more numerous than in several years.

Indiana. L. F. Steiner (April 8): Apple grain aphids began hatching today at Vincennes. (April 24): Apple grain aphid is very abundant but the rosy aphid appears less abundant than usual.

Ohio. T. H. Parks (April 22): R. prunifoliae was very abundant on opening buds 10 days ago at Columbus, and today the stem mothers have matured and are surrounded by colonies of young. No other species of aphids observed on apple trees today.

Michigan. L. Hutson (April 22): Grain aphids are very common on apple trees over the entire State.

Wisconsin. C. L. Fluke (April 25): Apple grain aphid hatched between April 10 and 14 in Door County and is quite numerous. Green apple aphid had not hatched by April 22.

J. A. Callenbach (April 25): Apple grain aphids and green apple aphids are relatively scarce in Crawford County in the southwestern part of the State. Syrphids are very active and should reduce the population even further.

Minnesota. A. A. Granovsky (April 15): Aphids are hatching in moderate numbers on fruit trees at Saint Paul.

LEAFHOPPERS (Cicadellidae)

Indiana. L. E. Steiner (April 24): Adult apple leafhoppers are very abundant in some orchards at Vincennes and evidence of considerable feeding on the new foliage is common.

COMSTOCK'S MEALYBUG (Pseudococcus comstocki Kuw.)

Virginia. F. J. Haussler (April 16): Hibernating egg masses ranged from scarce to very abundant in Albemarle County apple orchards and populations varied greatly within individual orchards. Eggs began to hatch on April 16, 7 days earlier than last year, and first-stage nymphs were first observed feeding on April 21, 11 days earlier than last year. Hibernating eggs also observed during April in Clarke, Nelson, Botetourt, and Roanoke Counties. Hibernating cocoons of the parasite Chorebus rufus Ishii are numerous in some orchards but many of these have been attacked by secondary parasites. The recently introduced Allopius sp., a Japanese parasite, had overwintered successfully in several localities in which it was colonized last year.

West Virginia. F. J. Haussler (April 17): Hibernating eggs are present in great numbers in one apple orchard at Knowlesville, in Berkeley County, and present though scarce in an orchard at Ranson, in Jefferson County. No hatched eggs observed today, although many appear about ready to hatch. Hibernating nymphs of the introduced Allopius sp. are very abundant at Knowlesville on trees in which this parasite was colonized last year.

SCURFY SCALE (Chrysomela fumosa Fitch)

Pennsylvania. T. L. Guyton (April 24): Somewhat numerous on apple at Coopersburg, Lehigh County, in southeastern Pennsylvania.

A BOSTRICHID (Bostrichus bicornis Web.)

Oklahoma. F. A. Fenton (April 25): Reported on apple trees at Okmulgee

LOCUST LEAF MINER (Chalepus dorsalis Thunb.)

Alabama. F. E. Guyton (April 17): Abundant on foliage of young apple trees at Auburn. No apparent damage.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

New Hampshire. J. G. Conklin (April 19): First hatching observed today on apple trees at Durham, in southeastern New Hampshire.

Connecticut. P. Garman (April 24): Fairly abundant on fruit trees. Egg hatching is about normal.

New York. R. W. Dean (April 24): Overwintering eggs began hatching on April 20 in the Hudson Valley, approximately 10 days earlier than usual.

N. Y. State Coll. Agr. News Letter (April 14): Eggs of the European red mite began to hatch in the vicinity of Kinderhook, Columbia County, on April 20. Today, April 26, the hatch is complete. In western New York eggs are numerous on peaches.

Pennsylvania. H. M. Steiner (April 28): First eggs hatched on April 16 in the vicinity of Arendtsville. Half of 1,000 marked eggs examined daily were hatched by April 20 when Stayman, Winesap, and McIntosh apple trees were in the full-pink stage.

Michigan. R. Hutson (April 22): Eggs are common on apple trees all over the State and are also numerous on plums and sweet cherries.

PEACH

PLUM CURCULIO (Conotrachelus nemophar Hbst.)

Virginia. A. M. Woodside (April 18): First adults jarred from peach trees in Albemarle County on April 15. Larger numbers on April 17. First adults found in Augusta County on April 16.

Georgia. W. H. Clarke and C. H. Alden (April 18): First adults collected by jarring trees at Cornelia, in northeastern Georgia, on April 11. Sixty-three were taken from 15 peach trees on April 17.

O. I. Snapp (April 21): Adults began to leave hibernation in large numbers on April 3, after the mean temperature was above 60° F. for several successive days; the first adults were seen on March 17, and mating was observed on April 3. Adults reached the center peach orchards on April 4. Peak of appearance was reached on April 15, when an average of 5.4 beetles per tree were removed from test

trees. First larvae of the season observed on peaches on the morning of April 19.

Alabama. J. M. Robinson (April 7): Peach curculio found in plums at Auburn today.

Mississippi. L. J. Goodgame (April 25): Plum trees reported damaged in Chickasaw and Monroe Counties.

Pennsylvania. H. M. Steiner (April 28): First adults taken in Adams County by jarring trees on April 15 at the pink stage of Elberta variety. Adults numerous 3 to 4 rows from borders at full bloom on April 19 in the vicinity of Arendtsville.

Illinois. S. C. Chandler (April 22): First adults jarred at edge of peach orchard today at Carbondale, in the southern part of the State.

Kentucky. W. A. Price (April 25): Adults active by April 19 at several widely scattered points in the State. Most of them were jarred from plum trees, a few being taken on peach.

A CURCULIONID (Achrastenus griseus Horn)

Texas. W. S. McGregor (April 23): Reported from Brazos County on March 25. Completely defoliating young peach trees in Robinson and Milam Counties.

BEETLES (Coleoptera)

Virginia. A. M. Woodside (April 17): Diabrotica duodecimpunctata F. and Epilachna borealis F. were jarred from peach trees in Albemarle County today.

SAY'S BLISTER BEETLE (Pomphopoea sayi Lec.)

Georgia. T. L. Bissell (April 12): Stripping Early Rose peach trees in an orchard at Woodbury, in west-central part of the State.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Mississippi. C. Lyle (April 25): Injury to peach trees reported in the Meridian area and in Hinds and Claiborne Counties.

PEACH BORER (Conopia exitiosa Say)

Florida. O. I. Snapp (April 14): Heavy infestation in home orchards near Starke, in northern Florida.

Mississippi. C. Lyle (April 25): Light infestations in peach trees reported from the Meridian area and from Claiborne and Bolivar Counties.

Nebraska. H. D. Tate (March 28): Reported from Nemaha County today.

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Georgia. W. H. Clarke and C. H. Alden (April 18): First moths caught in bait traps at Cornelia, in northeastern Georgia, on April 17.

GREEN PEACH APHID (Myzus persicae Sulz.)

Utah. G. F. Knowlton (April 14): Aphids have hatched and are attacking peaches at Providence. Some second-generation nymphs present. (April 25): Damaging some peach trees at Brigham.

C. J. Sorenson (April): Hatching in northern part of State and being fed upon by ladybeetles in considerable numbers.

RUSTY PLUM APHID (Hysteroneura setariae Thos.)

Georgia. O. I. Sharp (April 21): Very abundant in several peach orchards near Fort Valley, central Georgia, having caused considerable damage in one young orchard.

PLANT BUGS AND LEAFHOPPERS (Hemiptera)

Virginia. A. M. Woodside (April 17): Leptocoris trivittatus Say, Ervthroneura volucris Bean, and Lygus pratensis oblineatus Say, were commonly jarred from peach trees in Albemarle County. Some of the unfolding leaves already show the characteristic stippling by E. volucris. (Det. by P. W. Oman.)

PEACH AND PLUM SLUG (Eriocampoides amygdalina Rohw.?)

Mississippi. C. Lyle (April 25): Sawfly larvae observed on peach trees in Holmes County, but no specimens were received.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

New York. N. Y. State Coll. Agr. News Letter (April): In the Hudson River Valley flies were observed as early as April 7, and by the middle of the month eggs were somewhat numerous. The first hatching was observed on April 25. Development in the Lake district is not far behind, but no hatching has been observed.

Washington. J. F. Cooper (April 15): Specimens collected at Chelan on April 9. (Det. by P. W. Oman.)

PEAR THRIPS (Taeniothrips inconsequens Uzel).

New York. N. Y. State Coll. Agr. News Letter (April 12): In eastern New York pear thrips appeared on April 12.

PEAR MIDGE (Contarinia pyrivora Riley)

New York. N. Y. State Coll. Agr. News Letter (April 21): Numerous in eastern New York, in Orange County, on April 18; first observed in Ulster County on the same date. (April 28): Observed on Long Island ovipositing in pear buds, just beyond the cluster-bud stage.

A BORER (Anisandrus pyri Peck)

Washington. E. J. Newcomer (April 10): A borer, probably this species, reported as boring into trunks of pear trees at Yakima in considerable numbers.

PEAR LEAF BLISTER MITE (Eriophyes pyri Perg.)

Oregon. B. G. Thompson (April 12): Present on Bartlett pear tree at Brooks, in Marion County.

CHERRY

CHERRY CASEBEARER (Coleophora pruniella Clem.)

Wisconsin. C. L. Fluke (April 25): At an extremely low ebb in Door County.

BLACK CHERRY APHID (Myzus cerasi F.)

New York. N. Y. State Coll. Agr. News Letter (April): Nymphs observed on sweet cherries at Ithaca on April 10. First observed in eastern New York on April 11, and in western New York on April 15 and 16.

PLUM

A CURCULIONID (Peritelinus oregonus Van Dyke)

Oregon. P. Mowry (April 21): Chewing leaves of Italian plum at Riddle, in Douglas County, southern Oregon.

RUSTY PLUM APHID (Hysteroneura setariae Thos.)

Mississippi. C. Lyle (April 25): Reported from Copiah, Jones, and Stone Counties.

A SCALE (Lecanium sp.)

Oregon. S. C. Jones (March 17): Third-instar present in Keizar Bottom district today. Found on prunes and filberts.

CURRENT

CURRENT APHID (Caritophorus ribis L.)

New York. N. Y. State Coll. Agr. News Letter (April): An examination of currant plantings in Ulster County on April 25 showed that the currant aphid had hatched and had apparently been feeding for a few days.

IMPORTED CURRENT WORM (Pteronidea ribesii Scop.)

New York. N. Y. State Coll. Agr. News Letter (April): Examination of currant plantings in Ulster County on April 25 showed the imported currant worm adults actively migrating and ovipositing. Some eggs had hatched and the oldest larvae appeared to be only 1 or 2 days old.

GRAPE

GRAPE LEAFHOPPER (Erythroneura cones Say)

Georgia. T. L. Bissell (April 22): Adults of two-color forms are abundant on branches of muscadine grapes at Experiment; no damage noticeable. Leaves about one-third grown.

Washington. L. G. Smith (April 22): Reported as active in a vineyard at Sunnyside, in Yakima County, on February 22. Adults very active and seemed to be concentrated on the rye cover crops between the rows of vineyards in the Kennewick district on March 28.

GRAPEVINE APHID (Aphis illinoisensis Shim.)

Alabama. T. E. Guyton (April 17): At Auburn many adults present on well-sprayed grapevines that had just begun to leaf. First time it has been numerous in this city.

GRAPE LEAF FOLDER (Desmia funeralis Hbn.)

California. D. F. Barnes (March): Spring examination of samples of vineyard debris for overwintering pupae from vineyards in the Fowler-Parlier district, southeast of Fresno, taken between February 27 and March 6, indicated a small spring population. Vineyards had been heavily infested in fall of 1940.

PECAN

PECAN LEAF CASEBEARER (Acrobasis juglandis Le B.)

Texas. W. C. Pierce (April 4): Population approximately quadrupled in one orchard at Bastrop during 1940. Hibernacula of Acrobasis sp. were abundant on March 5.

PECAN NUT CASEBEARER (Acrobasis caryae Grote)

Texas. C. B. Nickels and W. C. Pierce (March): Population counts at Crystal City, in southern Texas, on March 7-8 showed that overwintered hibernacula infested 10 and 13 percent of the shoots on Burkett variety pecan trees in two orchards. On March 24 two orchards in central Texas showed that overwintered hibernacula infested 2.6 and 3.1 percent of the shoots on trees of the same variety.

APHIDS (Aphidae)

Georgia. P. M. Gilmer (April 26): Pecan aphid easily found in Tift, Lowndes, and Turner Counties.

Texas. F. C. Bishopp (April 5): Longistigma caryae Harr. present on live oak twigs and pecan at Uvalde. (Det. by P. W. Mason.)

OBSCURE SCALE (Chrysomphalus obscurus Comst.)

Mississippi. C. Lyle (April 25): Reported as injuring pecan trees in the Meridian district and in Yazoo County.

EUROPEAN FRUIT LECANIUM (Lecanium corni Bouche)

Texas. C. B. Nickels (April 4): Unusually abundant on pecan in an orchard at Comanche, in the central part.

FILBERT

FILBERT BUD MITE (Eriophyes avellanae Nal.)

Oregon. B. G. Thompson (April 9): Reported as often destroying large quantities of buds on the Deviana filbert trees at Forest Grove, in northwestern Oregon. Also found on witch-hazel.

CITRUS

GREEN CITRUS APHID (Aphis spiraecola Patch)

Florida. H. T. Fernald (April 9): Appeared on new growth about middle of February at Winter Park, but disappeared during a period of cold weather. Appeared suddenly in great numbers around April 1, when the weather became warm, and most of the new tips have all of the leaves tightly rolled, even though sprayed before much rolling occurred.

M. R. Osburn (April 22): Heavy infestations observed on flush growth of citrus near Fort Pierce, lower east coast.

J. J. R. Watson (April 23): Very abundant all month, about the heaviest infestation since 1925. Young citrus leaves have been seriously curled over most of the Citrus Belt.

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Florida. H. T. Fernald (April 12): Adults now very abundant on citrus trees in Winter Park.

J. R. Watson (April 23): Adults of D. citri and D. citrifolii Morg. have been generally seen on young growth in Citrus Belt during the last month.

Mississippi. C. Lyle (April 25): Specimens infesting Cape-jasmine received from Copiah County on April 2. Reports of injury were received from the Meridian district and Harrison County, where privet and gardenia plants are the hosts. Adults are beginning to emerge in the southeastern part of the State.

A THRIPS (Frankliniella cephalica bispinosa Morg.)

Florida. M. R. Osburn (April 22): Many observed in grapefruit blooms on lower east coast.

FIG

A TENEBRIONID (Blapstinus rufines Csy.)

California. D. F. Barnes (March 11): Heaviest infestation seen since 1930 on a fruit ranch northeast of Fresno, in a large number of excelsior pads discarded in 1940 by peach pickers. An average of 430 beetles found in each of 6 pads examined.

FIG SCALE (Lepidosaphes ficus Sign.)

California. C. K. Fisher (April 4): Eggs beginning to hatch today on fig trees at Fresno.

DATES

RED DATE-PALM SCALE (Phoenicococcus marlatti Ckll.)

California and Arizona. C. K. Fisher (April 8): Overwintered females fairly numerous on leaf bases of date palms at Tempe, in southern Arizona. Very few crawlers present, indicating that reproduction had only begun and probably had not spread to new growth. About same conditions found at Indio, in southern California, but no crawlers observed.

TRUCK - CROP INSECTS

VEGETABLE WEEVIL (Listroderes obliquus Klug)

South Carolina. N. Allen and H. N. Pollard (April 15): The first injury caused by larvae during the current season was observed on plant-bed tobacco plants on April 10. Since that time severe injury has been noted on a few plants in several beds in Florence County. A few injured plants were observed in a bed northeast of Mullins, Marion County, in the eastern part of the State, on April 15.

Georgia. E. H. Frederic (April 15): First noticed feeding on radish on April 7 at Thomasville in southern Georgia. Later found feeding and causing moderate damage on sweetpeas, strawberries, and a wild host.

Florida. J. R. Watson (April 23): The vegetable weevil has been sent in from Panama City, in Bay County, northern Florida, the most southern point reported from Florida. It is also doing severe damage to turnips at Monticello in the northern part of the State.

S. L. Lyons (April 9): Bugs very destructive to plants at Jacksonville. (Det. by W. H. Anderson.)

F. S. Chamberlin (April 17): First found attacking tobacco in Gadsden County in northern Fla. in 1937, and since that time it has become a tobacco-plant-bed pest of some importance. During the last few seasons all of the injury has been caused by the larvae, but now the adults have been found causing serious injury to newly set tobacco plants. In the two infested fields observed, the weevils had evidently migrated into the tobacco from outside areas, as the infestations were confined to the outer rows.

Mississippi. C. Lyle (April 23): Reports of injury to cabbage received from Copiah County, in central part of State, to turnips in Holmes County, in central part of State, and light damage in the Meridian area in the eastern part of the State.

SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata F.)

Virginia. L. W. Brannon (April 15): First beetles observed feeding in a field of snap beans at Norfolk on April 15, 3 days earlier than the first emergence last year.

South Carolina. C. F. Rainwater (April 26): Observed to be numerous in crimson clover and vetch that hadnot been turned under at St. Matthews, in Calhoun County, central part of State.

Kansas. H. R. Bryson (April 24): The first beetles this spring were taken today at Manhattan, northeastern part of State.

FLEA BEETLES (Malticinae)

Pennsylvania. B. F. Coon (April 28): First appearance in 1941. Specimens collected on weed hosts at Lancaster.

South Carolina. O. L. Cartwright (April 30): Severe injury reported on tomato, potato, but mostly on corn at Walhalla, northwestern part of the State.

Mississippi. C. Lyle (April 25): Damage to turnips by flea beetles supposed to be Phyllotreta sp. was reported from Oktibbeha County and from the Durant area, both in the central part of the State.

Missouri. L. Haseman (April 25): Some early work of flea beetles on garden crops has shown up since the middle of April in central Missouri

IMBRICATED SNOOT BEETLE (Epicaerus imbricatus Say)

Maryland. E. H. Siegler (April 24): Weevils found feeding on foliage and buds of apple grafts in nursery at Beltsville, in central part of State. (Det. by L. L. Buchanan.)

Kentucky. W. A. Price (April 25): Damaging onions at Bowling Green, southeastern Kentucky.

Mississippi. C. Lyle (April 21): Adults sent for identification on April 21 from Lafayette County in the northern part of the State.

A SCARABAEID (Diplotaxis sp.)

Texas. R. K. Fletcher (April 18): Adults reported to be injuring a garden in Harris County.

SEED-CORN MAGGOT (Hylemya cilicrura Rond.)

New York. N. Y. State Coll. Agr. News Letter (April 28): Adults prevalent during the last week on Long Island, after having begun to appear in the previous week.

Ohio. T. H. Parks (April 29): Seed beans in Lawrence County were destroyed in the ground during April. An entire planting of early beans was destroyed. A rye cover crop was plowed under early in the winter.

Utah: G. F. Knowlton (April 25): Injured peas planted before the recent storms in Cache and Weber Counties, in the northern part of the State.

SOWBUGS (Oniscidae)

Mississippi. C. Lyle (April 1): Specimens of pillbugs from Humphreys County, in western Miss., received on April 1; also reports of injury to tender plants in the southeastern part of the State, and to a garden in Hinds County in the western part of the State. Very abundant both in hotheds and out of doors at State College, in the eastern part of the State.

POTATO AND TOMATO

POTATO TUBER WORM (Gnorimoschema operculella Zell.)

Minnesota. A. G. Ruggles and C. E. Michel (April 16): Potato tuber moth not established, so far as we know, but found in storage places near University Farm.

A. A. Granovsky (April 15): Found to be present in potatoes stored in warm cellars from two localities in vicinity of St. Paul and Minneapolis about 15 or 20 miles apart. It is believed to be the first record for Minnesota, actually determined in November of 1940 by A. A. Granovsky and A. G. Peterson while examining tubers for pit scab. Subsequent examination of several potato cellars of commercial potato growers yielded negative results.

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

Virginia. L. W. Brannon (April 15): First beetles observed crawling around at Norfolk today, having apparently emerged from the freshly cultivated soil.

H. G. Walker and L. D. Anderson (April 25): Rather abundant in some potato fields at Norfolk.

South Carolina. F. Sherman (April 19): Adult observed defoliating spinach plants at Clemson, in the northwestern part of the State.

Mississippi. C. Lyle (April 25): Reports of injury to potatoes, as well as some injury to tomato plants, have been received from nearly all sections of the State.

POTATO PSYLLID (Paratrioza cockerelli Sulc)

Arizona. V. E. Romney (March 28): A female was depositing large numbers of eggs on Lycium spp. late in March and conditions appear favorable for production of large numbers on wild hosts.

BEANS

MEXICAN BEAN BEETLE (Epilachna varivestis Muls.)

Virginia. L. W. Brannon (April 18): First beetle collected in the field on snap beans today at Norfolk. This is 11 days earlier than the first emergence in 1940 and about a week earlier than the average emergence date for the last several years. Emergence had apparently just begun, as only 3 beetles were found on 16 rows of beans 200 feet long.

Florida. F. S. Chamberlin (April 21): Adults are very abundant in bean-fields in Gadsden County, in the northwestern part of the State.

BEAN LEAF BEETLE (Carotoma trifurcata Forst.)

Virginia. L. W. Brannon (April 18): First adult collected in the field feeding on young snap beans today at Norfolk. From frequent examinations made all along, it appears that April 18 is the date of first field emergence in this locality, 12 days later than that for last year.

South Carolina. W. M. Upholt (April 23): Rather plentiful on young beans and eating the leaves.

Georgia. T. L. Bissell (April 14): A few adults out feeding on the first beans and cowpeas at Experiment in the west-central part of the State.

Mississippi. C. Lyle, et al. (April 25): Injury to beans and cowpeas reported from the southeastern district, the Durant district in the central part of the State, and from around Meridian in the east-central part of the State. Damage to beans, probably caused by this species, reported from Coahoma and Tate Counties in the northern part of the State.

APHIDS (Aphidae)

South Carolina. C. F. Rainwater (April 26): Complaints of aphid injury to snap beans in Florence County, in the eastern part of the State.

PEAS

PEA WEEVIL (Bruchus pisorum L.)

Utah. G. F. Knowlton and W. E. Peay (April): Pea weevils were emerging from home-saved garden pea seed at a home in Logan, in the northern part of the State, on April 9. Overwintered pea weevils found in North Logan and Providence fields, in the northern part of the State, had a mortality of approximately 40 percent on April 14.

G. F. Knowlton (April 20): Fifty percent of the pea weevils found in hibernation at Smithfield, in the northern part of the State, were alive.

CABBAGE

IMPORTED CABBAGE WORM (Pieris rapae L.)

New Hampshire. J. G. Conklin (April 20): An adult was caught in the vicinity of a home garden in Durham, in the southeastern part of the State.

New York. N. Y. State Coll. Agr. News Letter (April): A few imported cabbage butterflies were observed on Long Island, April 21, ovipositing on some young cabbage plants.

Florida. H. T. Fernald (May 1): Adults are much more abundant at Winter Park than they have been for several years.

Mississippi. C. Lyle, et al. (April 25): Reported to be rather general over the northeastern section of the State. Some injury to cabbage in the Durant district and rather light general infestations in Lamar, in the northern part of the State, and Pearl River County, the latter county and Durant district being in the west-central part of the State.

Missouri. L. Haseman (April 25): Only a few butterflies in evidence throughout central Missouri since the early part of April.

GREENHOUSE LEAF TIER (Phlyctaenia rubigalis Guen.)

Louisiana. C. E. Smith (March 12): Larvae collected feeding on under side of leaves of cabbage at Baton Rouge, in the southern part of the State. (Det. by C. Heinrich.)

CABBAGE SHOOT WEEVIL (Ceutorhynchus assimilis Payk.)

Washington. L. G. Smith (April 8): Weevils found in large numbers south of Mount Vernon, in the northern part of the State, and not so abundant to the north on April 8. About 50 weevils found in 1 cluster of blossoms. Cabbage and turnip plants were being attacked. Weevils reported on mustard on March 28 in the Montesano district of Grays Harbor County, in the western part of the State.

CABBAGE APHID (Brevicoryne brassicae L.)

Tennessee. G. M. Bentley (April 14): About the usual numbers on early set cabbage.

Mississippi. C. Lyle, et al. (April 25): Plant lice, supposed to belong to this species, were reported to be causing injury to cabbage in the northeastern section, in the Meridian district, and in the Jackson district.

HARLEQUIN BUG (Murgantia histrionica Hahn)

Virginia. H. G. Walker and L. D. Anderson (April 14): Active in a kale field at Norfolk, but very few in numbers.

Alabama. J. M. Robinson (April 1): Found on cabbage at Auburn, in the eastern part of the State.

Mississippi. C. Lyle, et al. (April 25): Specimens received from Attala and Lincoln Counties late in March and early in April. Small field of rape completely ruined in Oktibbeha County. Complaints of injury to turnips in Attala and Holmes Counties and to cabbage in the Meridian area.

CABBAGE MAGGOT (Hylemya brassicae Bouche)

New York. N. Y. State Coll. Agr. News Letter (April 28): First adults found in eastern New York, on Long Island, from April 19 to 21, where they were fairly abundant. Egg laying has begun, and as many as 10 eggs per plant were found around cauliflower plants on April 25

at Valley Stream, Nassau County. Flies are also prevalent in Rockland County.

MELONS

A WEEVIL (Lepidocricus herricki Pierce)

Alabama. J. M. Robinson (April 12): Found on watermelon and cantaloups at Chatom, in the southwestern part of the State, on April 12.

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

South Carolina. F. Sherman and W. C. Nettles (April 25): Unusually severe in southcentral section of the State in Aiken, Allendale, Bamberg, Barnwell, Edgefield, and Saluda Counties, and north to Chesterfield County.

Iowa. H. E. Jaques (April): Present in Davis County, in southeastern Iowa.

Washington. L. G. Smith (April 22): The writer found many beetles still in hibernation beneath the bark of grape trunks in the Kennewick area of Benton County, in the southern part of the State, on March 28. Some were active and crawling around on the ground. Growers had just started cutting asparagus.

R. S. Lehman (April 19): Extensive damage to young asparagus plants in Walla Walla.

SPINACH

GREEN PEACH APHID (Myzus persicae Sulz.)

Virginia. H. G. Walker and L. D. Anderson (April 25): Spinach aphids were very scarce in most spinach fields in the Norfolk area, in the southeastern part of the State, but rather abundant in a few fields in the Western Branch area, in the southwestern part of the State.

SWEETPOTATO

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis Crotch)

Mississippi. J. E. Lee (April 25): Light infestation reported from Lamar County in the southeastern part of the State.

STRAWBERRY

WEEVILS (Curculionidae)

Washington. L. G. Smith (March 26): Severe damage to strawberries by the strawberry root weevil on a farm at Selah, in the southern part of the State, was reported on March 26. The weevils were more abundant than at the same date last year, from 5 to 10 larvae being found in many hills.

Oregon. J. Schuh (April 21): Adults of Brachyrhinus ovatus L. are not uncommon on strawberries and are laying eggs in the Willamette Valley.

STRAWBERRY WEEVIL (Anthonomus signatus Say)

Massachusetts. A. I. Bourne (April 23): Adults began to emerge in hibernating cages on April 20 to 21.

New York. N. Y. State Coll. Agr. News Letter (April 28): Strawberry weevils were beginning to cut buds in Orange County, eastern New York, on April 23.

Kentucky. W. A. Price (April 25): Strawberry bud weevil reported as doing serious damage to strawberry patches in the Bowling Green district. Some growers estimate a possible crop loss of 30 percent.

Mississippi. C. Lyle (April 25): One specimen sent from Rankin County with the report that youngberry plants were being injured.

STRAWBERRY LEAF ROLLER (Ancylis comptana Froel.)

Missouri. L. Haseman (April 22): Reported that in southwestern Missouri the moths were on wing, laying eggs, and that some eggs had already hatched.

STRAWBERRY FRUITWORM (Cnephasia longana Haw.)

Oregon. R. G. Rosenstiel (April 23): The omnivorous leaf-tier is webbing flax and damaging strawberries in the Willamette Valley, in the northwestern part of the State.

STRAWBERRY APHID (Capitophorus fragaefolii Oell.)

Oregon. H. E. Morrison (April 12): At Corvallis, in the western part of the State, the aphids are building up very rapidly and if they continue at the same rate they will probably be a serious problem to berry growers.

A SPITTLE BUG (Philaenus leucophthalmus L.)

Oregon. R. G. Rosenstiel (April 23): The strawberry spittle bug is two-thirds grown and damage to strawberries is about at the peak for this year in the Willamette Valley.

STRAWBERRY PAMERA (Orthaea vineta Say)

Florida. J. R. Watson (April 23): Paneras are increasing on strawberries.

COMMON RED SPIDER (Tetranychus telarius L.)

Florida. J. R. Watson (April 23): Red spiders are increasing on strawberries.

Oregon. H. E. Morrison (April 12): In Corvallis, western Oregon, last year, red spiders destroyed 10 acres of strawberries. They are just beginning to make their appearance and are 6 weeks in advance, as compared to last year.

TOBACCO

TOBACCO FLEA BEETLE (Epitrix parvula F.)

South Carolina. N. Allen and H. N. Pollard (April 21): This insect was found severely injuring tobacco plants in plant beds in Florence County, in the eastern part of the State. The injury was typical of that inflicted by the beetles when they occur in outbreak numbers during the summer months.

Florida. F. S. Chamberlin (April 15): They appear to be more abundant on newly-set tobacco than in the last several seasons in Gadsden County, in the northwestern part of the State.

AN ARCTIID (Apantesis vittata phalerata Harr.)

Kentucky. W. A. Price (April 25): Feeding on tobacco plants in a bed at Greensburg, in the southern part of the State.

C O T T O N I N S E C T S

BOLL WEEVIL (Anthonomus grandis Boh.)

South Carolina. F. F. Bondy, et al. (April 12): In Florence County, more weevils were found in the ground trash and more weevils are active in the cages than in 1940. (April 19): A total of 185 weevils were active in the 55 cages on April 18, as compared to none in 1940, and 73 in 1939.

C. F. Rainwater (April 26): Weevils have been very active in the cages this week. A total of 238 were active in the 55 cages today, as compared with none in 1940 and 77 in 1939.

Georgia. P. M. Gilmer (April 12): None seen in the open as yet in Tift, Berrien, Cook, Lowndes, and Echols Counties. Examination for weevils impossible as little cotton is up. Rather dry conditions have undoubtedly held weevils in hibernation.

Florida. C. S. Rude (April 5): Very active in hibernation cages for week ended April 5. Eight live weevils observed in cages having forest leaves and 13 in those having coarse grass as bedding. (April 26): During the week ended April 26, 39 active weevils were observed in the hibernation cages in which forest leaves were used as bedding material and 26 in the cages where coarse grass was used. No weevils observed in the field.

Louisiana. R. C. Gaines, et al. (April): Boll weevils taken on field flight screens in Madison Parish are as follows: Week ended April 5--2, as compared to none in 1939 and 1940; April 18--1, as compared to none in 1940 and 5 in 1939; April 26--3, as compared to none in 1940 and 5 in 1939.

Texas. K. P. Ewing, et al. (April 5): Weevils continue active in the hibernation cages in McLennan County. Highest number observed in any cage was 7. (April 17): In McLennan County, 23 observed active on April 17 in 1 cage located in the woods and containing oat straw; other cages showed more activity of weevils than during previous weeks.

PINK BOLLWORM (Pectinophora gossypiella Saund.)

Texas. L. W. Noble (April 19): At Presidio moth emergence from the winter hibernation cages increased steadily during the week ended April 19. Combined total taken from all cages was 271 this week, as compared to 31 for last week. (April 26): Moth emergence in the hibernation tent at Presidio increased from 271 moths for last week to 593 for this week.

BOLLWORM (Heliothis armigera Hbn.)

Texas. K. P. Ewing, et al. (April 18): None found during the week ended April 18 at Waco, McLennan County. E. E. Ivy reported finding eggs deposited on bluebonnets at Pharr, Tex., and also on corn silks at Pharr on April 16. He reports as follows: "Our fruitfly traps are screened against moths, but occasionally a screen drops out and such a trap is always filled with moths, among which are many bollworm moths." (April 25): First moth emerged from hibernation cages in McLennan County on April 25, only one and it was from a cage containing heavy "Blackland" soil.

COTTON FLEA HOPPER (Psallus seriatus Reut.)

Texas. K. P. Ewing, et al. (April 18): In McLennan County, during the week between April 12 and 18, inclusive, 3,251 nymphs emerged from the 34 emergence cages, as compared to the 16,115 of the preceding week, and 30,248 for 2 weeks ago. The highest emergence from a single cage was 597 (cage 16). Greatest emergence during a single day from any one cage was 226, from cage No. 1. Total emergence is 52,981. (April 25): A total of 156 nymphs emerged from the 34 cages between April 19 and 25, inclusive; however, the cages were inspected on only 3 of these days, April 19, 21, and 25, rain preventing any more inspections. Total emergence for the season is 53,137.

A. J. Chapman (April 12): First hopper noted on seeding cotton in the Brownsville area on April 10. Sweepings made on 2 weed host plants in the Brownsville area netted 319 adults and 1.5 nymphs per 100 sweeps on horsemint and 99 adults and 13.5 nymphs per 100 sweeps on evening-primrose.

APHIDS (Aphididae)

South Carolina. C. F. Rainwater (April 26): Root aphids are not so numerous on cotton as they were at this time last year.

Florida. C. S. Rude (April 26): Observed on cotton in one field in Marion County during the week ended April 26, but the predators seemed to be holding them in check.

MEALYBUGS (Pseudococcus spp.)

South Carolina. C. F. Rainwater (April 26): More numerous on cotton, soybeans, and several wild host plants than has been noted heretofore.

FOREST AND SHADE-TREE INSECTS

CANKERWORMS (Geometridae)

Connecticut. P. Wallace (April 23): Flights of male spring cankerworm (Paleacrita vernata Peck.) and fall cankerworm (Alsophila pometaria Harr.) less abundant than usual early in April. Egg clusters scarce on elm at New Haven, Cheshire, Hamden, and North Branford.

New York. N. Y. State Coll. Agr. News Letter (April): Egg masses of the fall cankerworm are numerous on apple on Long Island and in many neglected blocks in Niagara County.

Ohio. T. H. Parks (April 23): A few newly hatched larvae of fall and spring cankerworms were observed on expanding elm leaves along a stream at Columbus on April 20 and 22. Not abundant as yet.

Illinois. W. P. Flint (April 22): Cankerworm eggs began hatching approximately April 14, and have been hatching in large numbers up to April 21.

Minnesota. T. L. Amott (April 16): Adult spring cankerworm males abundant in Red River Valley, in the western part of the State.

Iowa. H. E. Jaques (April): Light infestation of cankerworms in Louisa, Henry, Jefferson, and Davis Counties, all in the southeastern section of the State.

Missouri. L. Haseman (April 25): A few moths still observed on April 21. No evidence of young larvae.

Oklahoma. C. F. Stiles (April 23): The spring cankerworm reported as defoliating orchard and other trees throughout the central portion of the State, being especially numerous in Love, Jefferson, Oklahoma, and Seminole Counties.

F. A. Fenton (April 25): Spring cankerworm reported as defoliating many fruit and shade trees in Okemah, in the central part of the State.

Texas. R. K. Fletcher (April): The spring cankerworm was reported from Brazos County, in the eastern section of the State, on April 6, and as being common on elm and oak at College Station, Dallas County, on April 13. Defoliating elms. Serious damage to fruit and shade trees reported.

E. W. Laake (April): P. vernata appeared in outbreak proportions in the vicinity of Dallas during the first week in April. More abundant, more widely distributed, and distinctly more destructive than last year.

FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.)

New York. E. P. Felt (April 23): Caterpillars have hatched in warmer areas in the Greater New York area. Infestations in regions bordering Catskills expected to be particularly serious.

N. Y. State Coll. Agr. News Letter (April 21): On Long Island the egg masses have hatched and damage is appearing.

Mississippi. C. Lyle (April 25): Specimens received from Forrest and Jones Counties, where they were feeding on oak. Reported as injuring trees in Jefferson Davis County, and a number of larvae were found in several places in Lamar, Jones, and Pearl River Counties. Numerous at Laurel.

TENT CATERPILLARS (Malacosoma spp.)

Utah. G. F. Knowlton (April 5): Severely attacking poplars, willows, and many cultivated and wild shrubs at Leeds, Saint George, and Washington, all in Washington County, southwestern Utah. (April 26): A few shrubs and trees damaged at Logan and Ogden, in the northern part of the State; caterpillars still small.

Washington. E. C. Durdle (April 2): Caterpillars reported hatching in large numbers in Clark County, in the southwestern part of the State.

GYPSY MOTH (Porthetria dispar L.)

Vermont. H. L. Bailey (April 30): Survey of street and shade trees in towns along the Connecticut River, on the eastern border of Vermont, from the Massachusetts line to a point about two-thirds of the distance to the northern border, showed from 15 to 100 percent infested with one or more egg masses. Infestation heaviest at the southern end.

CALIFORNIA PRIONUS (Prionus californicus Mots.)

Oregon. H. E. Morrison (April 18): At Brown's Island, 90 percent of cedar poles and 100 percent of softwood poles were infested with an average of 7 to a pole. Cedar poles averaged 5 and softwoods 12. Practically all poles severely damaged, having been on the ground 7 to 8 years.

A SCALE (Lecanium coryli L.)

Washington. M. H. Hatch (April 15): Specimen found attacking Betula alba and Ulmus orientalis. (Det. by L. M. Russell.)

PUTNAM'S SCALE (Aspidiotus ancylus Putn.)

Nebraska. H. D. Tate (April 16): Reported on young elm trees in Stanton County, in the northeastern section of the State, on April 1.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

New Hampshire. J. G. Conklin (April 24): Many specimens received. Report as prevalent in houses during April.

Massachusetts. E. P. Felt (April 23): Reported as occurring in considerable numbers in dwellings in eastern part of State.

Connecticut. E. P. Felt (April 23): Reported as being numerous in several dwellings in northeastern part of State.

Rhode Island. B. Eddy (April 22): Reported as numerous in houses throughout the State.

New Jersey. W. C. Baker (April 15): Active overwintered adult observed in Morris County, in the northern part of the State. Beetle activity reports have been received since April 15.

Pennsylvania. T. L. Guyton (April): Breaking hibernation in houses in New Hope, Valley Forge, and Philadelphia on April 20, 21, and 22, respectively, in the southeastern part of the State.

ELM BORER (Saperda tridentata Oliv.)

Pennsylvania. T. L. Guyton (April 5): Attacking elm at New Hope, in Bucks County.

A MIDGE (Diptera)

Kansas. H. R. Bryson (April 20): The larvae of a small midge were found for the first time infesting the blossoms of American elm at Manhattan. Under some trees the larvae were so numerous they could be collected by the hundreds. Since this is the first report, the insect has not been identified but is being reared. The amount of injury has not been confirmed.

ELM SCURFY SCALE (Chionaspis americana Johns.)

Delaware. E. P. Felt (April 23): Locally abundant in Wilmington area.

FIR

BALSAM TWIG APHID (Mindarus abietinus Koch)

Pennsylvania. G. B. Slesman (April 21): Very prevalent on Abies concolor and A. veitchi in Philadelphia area. Practically every bud examined showed a cluster of young immature aphids.

LOCUST

LOCUST BORER (Cyrtene robiniae Forst.)

Rhode Island. B. Eddy (April 22): Reported as a household insect.

Nebraska. H. D. Tate (April 14): Specimen received from Douglas County, in the eastern part of the State, today.

A BAGWORM (Oiketicus toumeyi Jones)

Arizona. R. A. Flock (April 19): Common on wild mimosa and on locust and mesquite trees in yards at Tucson. Completely defoliated locust and mesquite trees last year at Benson.

A MITE (Tetranychus althaeae von Hanst.)

Maryland. G. V. Johnson (March 13): Spider mites collected on young locust at Beltsville. (Det. by E. A. McGregor as probably T. althaeae.)

MAPLE

WALNUT SCALE (Aspidiotus juglans-regiae Comst.)

Virginia. A. M. Woodside (April 10): Present on silver maple at Staunton.

WHITE OAK CLUB GALL (Andricus clavulus O.S.)

New England and New York. E. P. Felt (April 23): Somewhat common at Tappan, eastern New York, and widely distributed in southwestern New England.

PUBESCENT OAK KERMES (Kermes pubescens Bogue)

Connecticut. E. P. Felt (April 23): Somewhat serious infestation found at Stamford.

New York. E. P. Felt (April 23): Reported from Tuxedo Park, in eastern New York.

PINE

NANTUCKET PINE SHOOT MOTH (Rhyacionia frustrana Comst.)

North Carolina. A. H. Bronson (February 17): Specimens reared from pupae collected on the Duke Forest. (Det. by C. Heinrich.)

WHITE PINE WEEVIL (Pissodes strobi Peck)

New Hampshire. J. G. Conklin (April 19): Observed feeding in numbers on white pine at Durham.

Massachusetts. J. V. Schaffner, Jr. (April 15): Adults rather abundant on terminals of white pine in a plantation at Weston, in the eastern part of the State.

Connecticut. J. V. Schaffner, Jr. (April 21): Reported as abundant throughout the State. Very early season.

New York. J. V. Schaffner (April 21): Reported abundant in the State. Adults first observed on April 16 at Norwich.

A WEEVIL (Hylobius radialis Buch.)

Massachusetts. J. V. Schaffner, Jr. (April 15): Adults emerged from hibernation within the last few days. A few were found on the terminal of Corsican and white pine at Weston on April 15.

Connecticut. E. P. Felt (April 23): Infestation found at Stamford.

New York. E. P. Felt (April 23): Infestation found at Mill Neck; others rather common.

PALES WEEVIL (Hylobius pales Hbst.)

New Hampshire. J. G. Conklin (April 8): Specimens received from Sanbornton, in central part of State. Reported as causing extensive damage to a large planting of white pine seedlings set out last year.

Virginia. L. A. Hetrick (April 10): Collected from foliage of Pinus taeda in King and Queen County.

PINE APHIDS (Cinara spp.)

New York. E. P. Felt (April 23): Eggs of the pine leaf aphid (Cinara strobi (Fitch)) rather common on white pines in the Greater New York area.

Virginia. L. A. Hetrick (April 15): C. taedae Tissot found feeding on foliage of loblolly pine in Middlesex County, in the eastern part of the State. More abundant than usual. Syrphid larvae present.

A SAWFLY (Neodiprion americanum Leach)

Virginia. L. A. Hetrick (April 27): In King and Queen County the hatching of overwintered eggs is again correlated with shedding of pollen from staminate cones of Pinus taeda.

RED-HEADED PINE SAWFLY (Neodiprion lecontei Fitch)

Virginia. L. A. Hetrick (April 11): Adults emerged for first time from caged cocoons held in insectary at West Point, in the eastern part of the State.

A SAWFLY (Neodiprion sertifer Geoff.)

New Jersey. F. A. Soraci (April 30): Overwintered eggs began hatching on April 29 on red and scotch pines in the Chester area, in the northern part of the State.

REDBUD

REDBUD APHID (Aphis pawneepae Hottes)

Oklahoma. F. A. Fenton (April 25): Heavily infesting redbud trees on the A. & M. Campus at Stillwater.

SOURGUM

A SCALE (Chionaspis sylvatica Sand.)

Virginia. A. M. Woodside (April): Prevalent in western part of State on Nyssa sylvatica.

SPRUCE

SPRUCE NEEDLE MINER (Taniva albolineana Kearf.)

Connecticut. E. P. Felt (April 23): Somewhat abundant on a number of Norway spruces in Westport, in the southwestern part of the State.

PINE NEEDLE SCALE (Chionaspis pinifoliae Fitch)

Pennsylvania. T. L. Guyton (April 16): Abundant on spruce at Phoenixville, in the southeastern part of the State.

Nebraska. H. D. Tate (April 15): Specimen found on spruce tree in Cheyenne County, in the western part of the State.

EASTERN SPRUCE GALL APHID (Adelges abietis L.)

New York. E. P. Felt (April 23): Somewhat common in the Greater New York area, certain trees showing a markedly heavy infestation while others nearby were practically free.

A SPRUCE GALL APHID (Adelges cooleyi Gill.)

Washington. E. J. Newcomer (April 18): Very numerous on ornamental spruce at Yakima. Eggs just beginning to hatch.

SUMAC

SUMAC FLEA BEETLE (Blepharida rhois Forst.)

Alabama. J. M. Robinson (April 9): An adult collected at Reform, in the eastern part of the State.

SYCAMORE

AN APHID (Drepanosiphum platanoides Schr.)

Texas. R. K. Fletcher (April 15): Present on sycamore in Kaufman County, in the northwestern part of the State.

SYCAMORE LACEBUG (Corythucha ciliata Say)

New York. E. P. Felt (April 23): Sycamore lacebugs were reported as abundant at New Rochelle.

WILLOW

SPOTTED WILLOW LEAF BEETLE (Chrysomela lapponica L.)

Kentucky. W. A. Price (April 25): Poplar and willow foliage damaged at Independence, in the northern part of the State.

A MIDGE (Rhabdophaga sp.)

Connecticut and New Jersey. E. P. Felt (April 23): Willow branch midge reported as abundant and injurious last year from Stamford, Conn., and Princeton, N.J.

INSECTS AFFECTING GREENHOUSE AND
ORNAMENTAL PLANTS

HAIRY CHINCH BUG (Blissus hirtus Montd.)

Connecticut. J. P. Johnson (April 21): At New Haven, during the week of April 13, hibernating adults became active in lawn grass, where they were observed traveling in and over the turf.

AN APHID (Macrosiphum taraxaci Kalt.)

Oregon. R. L. Post (April 7): Reported severely damaging a 6-acre planting of dandelions being grown for seed at Salem. (Det. by A. N. Tissot.)

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

Mississippi. G. L. Bond (April 25): New light infestations reported in southeastern part of the State.

A COCCID (Parlatoria theae Oкл.)

North Carolina. J. O. Rowell (February 28): A specimen infesting shrub at Reidsville, Rockingham County.

A MIDGE (Sciara sp.)

Minnesota. A. G. Ruggles and C. E. Mickel (April 16): Found on sweet-clover in greenhouse at University Farm.

A FLY (Scatophila sp.)

South Carolina. W. M. Upholt (April 7): Scatophila sp., probably despecta Hal., very plentiful, particularly around eggplant seedlings, in a greenhouse at Clemson during the latter part of March. (Det. by D. G. Hall.)

ARBORVITAE

ARBORVITAE APHID (Cinara tujafilina Del G.)

Mississippi. C. Lyle (April 25): Specimens received from Chickasaw County on April 7. Reported as injuring arborvitae in the north-eastern district, and in the Meridian and Jackson areas.

Oklahoma. F. A. Fenton (April 25): More injurious to arborvitae and cedar than it has been in several years. The subterranean form, when numerous, kills shrubs.

A SPIDER MITE (Tetranychus sp.)

Mississippi. C. Lyle (April 25): Infested arborvitae and boxwood plants received from Warren and Alcorn Counties, and infested arborvitae plants from Copiah County, the Jackson area, and Tate County. Heavy infestations were observed in greenhouses in the Meridian district. Reported as infesting lettuce in a greenhouse in Panola County.

E. W. Dunnam, et al. (April 5): A few red spiders were noted on arborvitae plants in Leland, Washington County, in the eastern part of the State, during the week ended April 5.

AZALEA

AZALEA SCALE (Eriococcus azaleae Comst.)

Alabama. J. M. Robinson (April 15): Found on azalea at Montgomery.

Mississippi. C. Lyle, et al. (April 25): A few small heavy infestations reported from the southeastern district, and a few light infestations observed in the Meridian area.

A SCALE (Lecaniodiaspis sp.)

Virginia. A. M. Woodside (April 21): Single infested azalea plant found along edge of woods at Crozet, in Albemarle County. (Det. by H. Morrison.)

BOXWOOD

BOXWOOD LEAF MINER (Monarthropalpus buxi Laboulb.)

New Jersey. H. W. Allen (April 15): Heavy infestation noted at Moorestown.

Oregon. J. Schuh (April 20): Started to emerge on boxwood at Albany on April 20.: Very serious in certain localities.

BOXWOOD PSYLLID (Psylla buxi L.)

Oregon. J. Schuh (April 22): Common and beginning to emerge on boxwood in the Willamette Valley.

CAMELLIA

CAMELLIA SCALE (Lepidosaphes camelliae Hoke)

Mississippi. M. L. Grimes (April 25): Reported as heavily infesting camellia in some localities in the Meridian area.

TEA SCALE (Fiorinia theae Green)

Mississippi. T. F. McGehee (April 25): Heavily infesting camellia leaves in Harrison County, in the southern part of the State.

CARNATION

A FLY (Dolichopus ramifer Loew)

Colorado. L. E. Taylor (March 25): Specimens collected on carnations in a greenhouse at Denver. Plants found infested by a maggot located under the epidermis of the plant stem. (Det. by C. T. Greene.)

CHRYSANTHEMUM

CHRYSANTHEMUM GALL MIDGE (Diarthronomyia chrysanthemi Ahlberg)

Oklahoma. F. A. Fenton (April 25): Reported on chrysanthemums at Oklahoma City.

DOGWOOD

A BORER (Chrysobothris sp.)

Tennessee. G. M. Bentley (April 26): Flat-headed borer attacking red dogwoods at Knoxville, in Knox County.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

Mississippi. J. Milton (April 25): Reported as severely damaging euonymus plants in Yazoo County, in the western part of the State.

Texas. R. K. Fletcher (March 25): Present on euonymus in Rusk County in the northeastern part of the State.

GLADIOLUS

GLADIOLUS THRIPS (Taeniothrips simplex Morison)

Florida. J. R. Watson (April 23): Becoming increasingly abundant throughout the central and southern parts of the State.

PYRACANTHA

A LACEBUG (Corythucha cydoniae Fitch)

Georgia. T. L. Bissell (April 9): Adults found hidden in dead leaves of Pyracantha sp. at Experiment. Not active today, although green leaves show feeding spots.

HOLLY

HOLLY LEAF MINER (Phytomyza ilicis Curtis)

New York. E. P. Felt (April 23): Found in moderate numbers affecting holly in several localities in western Long Island.

New Jersey. E. P. Felt (April 23): Found in moderate numbers affecting holly at Orange.

IRIS

IRIS BORER (Macronoctua onusta Grote)

Ohio. C. R. Neiswander (April 26): Following 2 weeks of abnormally high temperature, eggs began hatching on April 15 and by April 22 all viable eggs had hatched. The average starting date for hatching is May 1 at Wooster.

JUNIPER

JUNIPER WEBWORM (Dichomerus marginellus F.)

Connecticut. E. P. Felt (April 23): Damage found somewhat commonly on juniper at New Canaan, in the southeastern part of the State.

MIMOSA

A SCALE (Lecaniodiaspis sp.)

Virginia. A. M. Woodside (January): Specimen of infested mimosa received from Charlotte County. (Det. by H. Morrison.)

MAGNOLIA

A PSYLLID (Trioza magnoliae Ashm.)

Mississippi. C. Lyle (April 25): Specimens found in galls on leaves of a wild tree, probably bay, from Harrison County.

A SCALE (Toumeyella turgida Ckll.)

Mississippi. C. Lyle (April 25): Specimens received from Harrison and Hancock Counties, where they were infesting magnolia.

PEONY

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

Virginia. A. M. Woodside (March): Common on old peony stems at Staunton.

ROSE

ROSE APHID (Macrosiphum rosae L.)

New Jersey. M. D. Leonard (April 30): Moderate to heavy infestation on tender terminal shoots of large climbing rosebush at Haddonfield.

South Carolina. C. F. Rainwater (April 26): Reported injuring roses in Florence County, in the eastern part of the State.

Georgia. P. M. Gilmer (April 26): Worse than normal on roses in Tift, Lowndes, and Turner Counties, in the southern part of the State. Little or no indication of parasitization.

Mississippi. C. Lyle (April 25): Aphids, possibly belonging to this species, were abundant on rose in the southeastern section and in the Meridian area. No specimens received.

E. W. Dunnam, et al. (April 12): Aphids noted in Washington County on roses. Species not determined.

AN APHID (Myzus porosus Sand.)

Florida. M. D. Leonard (April 12): Several garden-rose plants heavily infested. Reported recently as abundant on roses in gardens at Orlando.

A LEATHOPPER (Dikraneura cockerellii Gill.)

Arizona. R. A. Flock (April 14): Causing severe damage to ornamental roses near dormant grape vines at Tucson, in southern part of State, in January, February, and March.

OLIVE SCALE (Parlatoria oleae Colv.)

California. C. K. Fisher (March 31): Eggs, but no young, found on rose at the laboratory at Fresno on March 19. A few crawlers were found under scales examined on March 26 but none were seen to be migrating. Crawlers first recorded on rose on April 10 in 1940.

THRIPS (Thysanoptera)

South Carolina. C. F. Rainwater (April 26): Numerous in rose buds in Florence County.

A ROSE SAWFLY (Tenthredinidae)

New Jersey. M. D. Leonard (April 30): Number of small black sawflies, several of which seemed to be trying to oviposit, observed resting on leaves of several rose bushes at Haddonfield.

SNOWBALL

SNOWBALL APHID (Aphis viburnicola Gill.)

New Jersey. M. D. Leonard (April 30): Several large snowball shrubs at Haddonfield have very few leaves deformed. Infestation seems to be lighter than usual.

SPIREA

SPIREA APHID (Aphis spiraeicola Patch)

New Jersey. M. D. Leonard (April 30): At Haddonfield no aphids observed on spirea shrubs which become more or less infested each season.

I N S E C T S A T T A C K I N G M A N A N D

D O M E S T I C A N I M A L S

MAN

MOSQUITOES (Culicinae)

Vermont. H. L. Bailey (April 14): Very small larvae of Aedes spp. found today in swampy pools at Salisbury, Addison County, in the western part of the State.

Utah. G. F. Knowlton (April 20): Adult A. dorsalis Meig. present in field west of Logan.

Oregon. E. F. Knipling (March 31): Unusually mild weather during February and March has resulted in some mosquito breeding in the Portland area. Adults of Theobaldia spp. were active as early as March 2 and egg rafts of this species were taken in considerable numbers on March 16. Larvae of A. increpitus Dyar were found on March 11, 24 days earlier than recorded collections of this species for the Portland area.

A GNAT (Chaoborus astictopus D. & K.)

California. A. W. Lindquist (March 31): Number of larvae in bottom samples at Nice, in the northwestern part of the State, is somewhat greater than that of 1940, but approximately 26 percent less than in 1939. More larvae were recovered on the southwestern part of

the lake during the past winter than in the northeastern part, and the number of larvae at Upper Blue Lake on March 7 was slightly higher than in Clear Lake. (April 23): First emergence at Nice.

SANDBLIES (Culicoides spp.)

Virginia. L. A. Hetrick (April 21): First biting and seasonal activity of adults noted at West Point.

Florida. W. E. Dove (April 12): The sand fly Culicoides mississippiensis Hoffm. is very numerous and annoying to surveying parties working on army camp sites.

F. C. Bishopp (April 26): C. canithorax Hoffm. reported present in small numbers on marshes and in New Smyrna, in the eastern part of the State, during the middle of March. was annoying for only a few nights on the mainland, Fort Pierce, during January, February, and March. Reported by residents living along the river as very light.

Mississippi. G. L. Bond (April 25): Reported as annoying along the Gulf coast.

BEDBUG (Cimex lectularius L.)

Rhode Island. B. Eddy (April 22): Reported infesting a house.

Nebraska. H. D. Tate (April 16): Reported infesting a house in Douglas County, in the western part of the State, on April 7.

Oregon. D. C. Mote (April 2): Found in used building material at Weston and in an old house at Gales Creek, in the northern part of the State.

TROPICAL RAT MITE (Liponyssus bacoti Hirst)

California. E. A. McGregor (April 3): Specimens collected at Piru, in the southern part of the State, on March 26, were found crawling on the inside walls of a residence. (Det. by H. E. Ewing.)

D. F. Barnes (March 24): Specimens taken on rat-infested property northeast of Fresno where cats, dogs, and humans have been considerably irritated. (Det. by H. H. Keifer.)

AMERICAN DOG TICK (Dermacentor variabilis Say)

Massachusetts. C. N. Smith (April 2): Few nymphs found on a mouse taken at Gay Head, on Martha's Vineyard, on March 27.

Maryland. E. B. Marshall (April): First tick taken on clothing on April 14 at Laurel. More abundant than I have ever seen on setter dogs.

District of Columbia. F. C. Craighead (April 7): Two specimens found on clothing after a walk over vacant lots in Chevy Chase. (April 13): Many ticks present on vegetation up the Potomac River, and on dogs.

H. L. Trembley (April 19): Two male ticks were received on April 19; the first specimens to be received by the Division of Insects attacking man and animals.

South Carolina. W. C. Nettles (April 25): Reported as more numerous than usual on dogs in counties of Richland, in the central part of the State, and Marlboro, in the eastern part of the State.

CLOVER MITE (Bryobia praetiosa Koch)

Virginia. C. L. Pace (March and April): Specimens found in buildings at Richmond on March 31. Reported as crawling about inside the windows and up the curtains of a house "by the thousands." (Det. by H. E. Ewing.)

S. B. Fenne (April 15): Reported as pest in house in Halifax County, in the southern part of the State.

E. A. Back (April 30): Specimens received on April 14 from Beaverdam, where they were very abundant on lawn and about walls of a house.

South Carolina. R. E. Ware (March 14): Collected in an apartment at Clemson.

Kentucky. W. A. Price (April 25): Reported in dwellings at Glasgow and Lexington.

Nebraska. H. D. Tate (March 17): Specimens submitted from Scotts Bluff County, with report that they were abundant and annoying in and about houses at Scottsbluff and Gering.

CATTLE

SCREWORM (Cochliomyia americana C. & P.)

Texas. D. C. Parman (April 25): Population of C. americana, as indicated by April trap catches, is approximately three times as great as for the same period last year and one of the highest populations recorded during the last 5 years for the overwintering area. Infestations are not uniformly heavy. In Uvalde and Kinney Counties, in the southern part of the State, where populations have been consistently high heretofore, the flies were approximately one-third less in number than in the adjoining counties. The population is generally higher over the western part of the overwintering area than for any year during the last 5-year period, and is lower over the Gulf coast and east of San Antonio. Slight increase in the immediate vicinity of Victoria. The northern part of the State is being infested about 3 weeks earlier than last year.

E. C. Cushing (April 22): Screwworms have reached as far north as an east-and west-line from Fort Stockton to Llano. Cases appeared at Menard on April 14, which is about 3 weeks earlier than last year. This appears to substantiate the belief that the fly overwintered from 50 to 100 miles farther north than a year ago. Reported as building up in the Refugio County section, in the southeastern part. The population in the Laredo section is rather high and activity is increasing. Infestation in calves from 3 days to 2 weeks old ran as high as 10 percent on some ranches in the thick brushy section of Zavala and Uvalde Counties on April 19. Screwworm is likely to spread because large numbers of cattle and other livestock are beginning to move by truck within the State. Infested animals have been shipped from Uvalde County to Northern States.

California. C. C. Deonier (April 26): No C. americana cases were found in a brief survey in the Sacramento Valley from Redding to Davis, nor was C. macellaria F. observed.

HORN FLY (Haematobia irritans L.)

Florida. W. E. Dove (April 28): About 500 horn flies were present on dark colored animals at the laboratory and in Panama City they are now becoming numerous on range cattle.

Oklahoma. W. G. Bruce (April 9): Very few observed on cattle at Waurika, in the southern part of the State.

Texas. W. G. Bruce (April 23): First appearance on cattle at Dallas was noted on March 10, when a total of 3 flies was found on 8 head of cattle. Forty-two flies were found on 6 head of cattle on March 21, 100 flies on 1 animal on April 7, and approximately 200 flies on 1 animal on April 11. Largest number from overwintering cages emerged during the period April 7 to April 20, and dates of maximum emergence from cages are almost identical with those of 1940.

STABLEFLY (Stomoxys calcitrans L.)

Florida. W. E. Dove (April 25): Increased numbers of dogflies were reported in the vicinity of Sarasota. (April 30): During the latter half of this month adults have ceased to emerge in overwintering cages containing peanut litter. Breeding is beginning in mixtures of manure and straw about some local dairies.

F. C. Bishopp, et al. (April 26): Few noted causing slight annoyance at Coronado Beach, on March 15. Dog flies continued to emerge from peanut litter throughout January, February, and March, with some very heavy infestations furnishing flies at the rate of 2,505 per cubic foot of litter.

Texas. E. W. Laake (April 23): Heavy breeding has continued throughout the month. Cattle in vicinity of Dallas have been annoyed all winter and increasingly so during April, as many as 100 flies on the forelegs of one animal being common among dairy cattle.

COMMON CATTLE GRUB (Hypoderma lineatum De Vill.)

Texas. E. W. Laake (April 23): Peak of activity occurred during last week of March, although still active at Dallas as late as April 10.

A DEER FLY (Chrysops fuliginosa Wied.)

Florida. W. E. Dove (April 7): Appeared in numbers about school grounds near a salt bayou and on cattle in the vicinity of Panama City.

LONE STAR TICK (Amblyomma americanum L.)

Mississippi. C. Lyle (April 25): Large numbers of nymphs on grass and weeds reported as causing annoyance on one property in Copiah County.

Oklahoma. C. F. Stiles (April 23): Very numerous in the southeastern part of the State. Found on lawns and dogs in Durant.

LICE (Anoplura)

Oklahoma. J. Myron Maxwell (April 24): Reporter has never known lice to be such a problem on all forms of livestock as they are at present. Practically every animal examined, from the northeastern part of the State to the southwestern, and even the Panhandle section has been infested with some form. Fortunately, there have only been a few reports of the short-nosed ox louse (Haematopinus eurysternus Nitz.) but the long-nosed ox louse (Linognathus vituli L.) and the biting ox louse (Bovicola bovis L.) have been extremely abundant. Many dipping vats are being built throughout the State for the purpose of louse and tick control.

Texas. J. O. Stovall (April 23): Cattle in Hemphill County show more signs of lice than ever before. Infestations reported as general to very severe in five counties in eastern and western parts of the State.

POULTRY

STICKTIGHT FLEA (Echidnophaga gallinacea Westw.)

Florida. W. E. Dove (April 29): Chickens infested with sticktight fleas were reported from Panama City today.

Mississippi. F. F. McGehee (April 25): Reported as causing annoyance in some garages and homes in Harrison County.

SHEEP

FLEECE WORMS (Phormia spp.)

Texas. E. C. Cushing (April 22): Reported as causing quite a bit of trouble on unsheared sheep in the Menard area.

D. C. Parmen (April 25): Wool worm cases, many of which are especially severe, have been reported generally in sheep. Some flocks are said to have as many as 15 percent of the sheep infested. (April 26): Blowfly population is one of the highest of a 10-year record for all status traps west of San Antonio. At Uvalde, population of the black blowfly (P. regina Meig.) for the first half of April was equal to the normal annual catch. Infestations are occurring in many of the primary screwworm infestations, and at present threaten heavy losses to sheep and goats throughout the western part of the United States, as well as to other animals by secondary infestations in wounds primarily infested by the screwworm.

E. W. Lacke (April 20): Infestation by P. regina occurred in a dehorned animal at Dallas.

California. C. C. Deonier (April 26): A few wool worm cases were found in a brief survey from Redding to Davis in the Sacramento Valley.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

TERMITES (Isoptera)

New Hampshire. J. G. Conklin (April 9): Specimens received from Nashua, in the southern part of the State, reported as damaging rolls of paper stock in a mill.

Rhode Island. B. Eddy (April 22): Reticulitermes flavipes Koll. reported as numerous, especially in old houses.

New York. E. P. Felt (April 23): Infestations of R. flavipes found in a region within 50 miles of New York City, with serious injury reported to underpinnings of some buildings.

Virginia. L. A. Hetrick (April 3): First swarming of reproductives of R. flavipes noted outside of a heated building in West Point.

District of Columbia. R. A. St. George (April 19): First emergence of R. flavipes out of doors, reported swarming from soil adjacent to foundation of a building in Washington. Normally abundant.

North Carolina. C. H. Hoffman (April 24): Termites reported as swarming in houses at Asheville.

Georgia. W. H. Clarke (April 6): First emergence of termites from an infested house observed at Cornelia.

Ohio. T. H. Parks (April 23): Reported as normally abundant at Columbus.

Indiana. J. J. Davis (April 23): Termites numerous at La Fayette during the last 2 weeks.

Missouri. L. Haseman (April 25): Termites reported as swarming in central part of the State.

Nobraska. H. D. Tate (March 28): R. tibialis Banks reported from Douglas, Saunders, and Pawnee Counties, in the eastern part of the State.

Texas. R. K. Fletcher (April): Termites reported as injuring houses in Lamar County on April 7, in Colorado and Hopkins Counties on April 11, in De Witt County on April 15, and as being present on rose bushes in McMullen County on April 12

Idaho. J. R. Douglass (April 12): Termites reported in buildings in Twin Falls.

Utah. G. F. Knowlton (April 12): Termites severely damaging a house at Smithfield, in the northern part of the State.

ANTS (Formicidae)

Connecticut. E. P. Felt (April 23): Camponotus herculeanus pennsylvanicus Deg. recently reported from Danbury and Darien, in the southwestern part of the State.

North Carolina. C. H. Hoffmann (April 24): Ants reported as marring lawns at Asheville.

Mississippi. C. Lyle, et al. (April 25): Specimens of Iridomyrmex humilis Mayr received from Perry County on March 29; reported from Monroe County. Specimens of fire ants (Solenopsis xyloni McCook) were received from Harrison County, where they were marring lawns. Reported as numerous and damaging the berries in strawberry patches, and from Monroe, Prentiss, and Simpson Counties. Specimens of Camponotus caryae rasilis Wlbr. were recently sent in from Hinds County.

Louisiana. Mrs. M. E. Byrd (March 30): Monomorium pharaonis L. reported as present in every part of a house at Baton Rouge. (Det. by M. R. Smith.)

Indiana. J. J. Davis (April 23): Lawn ants reported as abundant in lawns all over the State.

Utah. G. F. Knowlton (April 10): At Logan red ants are invading a new house and harvester ants are annoying and killing out spots in alfalfa fields.

BROWN-BANDED ROACH (Supella supellecillum Serv.)

Michigan. E. A. Back (April 23): Specimens received today from Muskegon Heights, in the northern part of the State, where they are reported as infesting the house of a family which recently moved with furnishings from Texas.

Oklahoma. F. A. Fenton (April 25): Reported from Stillwater.

GERMAN COCKROACH (Blattella germanica L.)

Mississippi. C. Lyle (April 25): Specimens sent from Humphreys County on March 31 and from Choctaw County on April 18.

Utah. G. F. Knowlton (April 19): Infesting a market at Logan.

ORIENTAL COCKROACH (Blatta orientalis L.)

Rhode Island. B. Eddy (April 22): Reported with household insects.

Nebraska. H. D. Tate (March 25): Specimens received from Thayer County, in the southeastern part of the State, on March 25.

AN EARWIG (Marava wallacei Dornh.)

New Jersey. E. A. Back (April 30): Collected at a bakery in Dumont in the northern part of the State on January 31. According to A. B. Gurney, this species is not known to be established in this country, but is sometimes intercepted from Australia. (Det. by A. B. Gurney.)

WHARF BORER (Nacorda melanura L.)

New York. E. A. Back (April 30): Adults received April 8 from lower Broadway, New York City, and on April 17 from Brooklyn.

A LATHRIDIID (Cartodere elegans Aube)

New York. E. A. Back (April 10): Specimens received from Brooklyn from a building about 30 years old, newly renovated with new plaster walls and hardwood flooring. (Det. by W. S. Fisher.)

A BORER (Xylotrechus colonus F.)

New York. E. A. Back (April 15): Specimens from firewood in basement of a house received from Brooklyn. (Det. by W. S. Fisher.)

A BORER (Neoclytus conjunctus Lec.)

Oregon. J. E. Davis (April 8): Adults emerged from oak and ash firewood in a household at Salem.

CARPENTER BEE (Xylocopa virginica Drury)

Virginia. L. A. Hetrick (April 22): Adults numerous and active at West Point during warm weather of last 2 weeks.

COMMON POWDER-POST BEETLE (Lyctus planicollis Lec.)

Oklahoma. F. A. Fenton (April 25): Reported from four houses in Oklahoma City.

BLACK CARPET BEETLE (Attagenus piceus Oliv.)

Rhode Island. B. Eddy (April 22): Reported as household insect.

Michigan. E. Hutson (April 22): In Detroit common in a house after it had been fumigated.

VARIED CARPET BEETLE (Anthrenus verbasci L.)

District of Columbia. E. A. Back (March 28): Adult specimens received from a house in Washington.

A CLOTHES MOTH (Tineola walsinghami Busck)

Florida. E. A. Back (March): Larval cast and reared adult received from house in Saint Petersburg. (Det. by C. Heinrich.)

BROWN SPIDER BEETLE (Ptinus brunneus Dufts.)

Alabama. J. M. Robinson (April 4): Found in flour and feed grain at Florence.

Ohio. T. H. Parks (April 22): Specimens received during March from Geauga County, in the northeastern part of the State, and from Clark County, in the west-central section, with statement that they were annoying in occupied houses.

Mississippi. C. Lyle (April 25): Adults received from Tippah County, in the northeastern part of the State, on April 1.

STORED GRAIN INSECTS (Coleoptera)

New Jersey. E. A. Back (April 21): Adults of Sitophilus granarius L. were received from a duplex house in Summit, in the northern part of the State.

District of Columbia. E. A. Back (March 28): In Washington specimens of the larder beetle (Dermestes cadaverinus F.) were collected in the commissary of a hospital after fumigation of the building. (Det. by H. S. Barber.)

Alabama. J. M. Robinson (April 8): Tenebrio obscurus F. found in stored cereal products at Wallace in the southern part of the State.

Minnesota. A. G. Ruggles and C. E. Mickel (April 16): Cynaesus angustus Lec. found in stored corn in Lakefield, in the southwestern part of the State.

North Dakota. J. A. Munro (April): Specimens of Tribolium madens Charp. and Cathartus advena Waltl. were sent in from Lunds Valley in Mountrail County, and from Wahpeton, in Richland County, on April 11; of T. confusum Duv. from Wahpeton on April 11; and of Laemophloeus minutus Oliv. from Willrose, in Williams County, and from Wahpeton on April 16.

Idaho. R. A. Fisher (April 15): Stored-grain insects are becoming more numerous in the northern counties, the species present being T. castaneum Hbst., Ptinus fur L., Cryptophagus sp., T. confusum, Oryzaephilus surinamensis L., and L. ferrugineus Steph. The last three are the most common species.

A BEETLE (Henoticus californicus Mann.)

California. P. Simmons (April 2): Specimens collected on sacked dried fruits, including apples and apricots, at Oakland. (Det. by W. S. Fisher.)

A SNOW FLEA (Achorutes nivicola Fitch)

Rhode Island. B. Eddy (April 22): Reported on snow in great numbers a month ago and found in a driveway last week.

GIANT WATER BUG (Belostomatidae griseus Say)

Florida. E. A. Back (April 10): Specimens received from Miami Beach. Reported as crawling on streets by the thousands. (Det. by H. G. Barber.)

Special Note to Collaborators

An American plant, known as Salvia reflexa, which is a member of the mint family and a near relative of the ornamental scarlet sage cultivated in gardens, has become established in Australia as a noxious weed, and Government entomologists there are looking for insect enemies of the plant. Please report any insect enemies you may find on the plant.

SUMMARY OF JAPANESE BEETLE PARASITE LIBERATIONS,
INCLUDING THE YEAR 1940

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The object of this report is to bring together data on releasements of the more important parasites of the Japanese beetle for the benefit of the various State workers who have cooperated in this work and others who may be interested.

Although five parasite species and two racial forms are known to be established, only four of these, namely, Tiphia vernalis Rohw., T. popilliavora Rohw., T. popilliavora (Korean strain), and Centeter cinerea Ald., have received consideration in recent years. The status of Dexia ventralis Ald. and Prosenia sibirita F. remains about the same as recorded at the close of the 1938 season^{1/}.

Tiphia vernalis, the spring Tiphia.--This parasite, first released in 1926, is now well established generally throughout the area of intense beetle infestation. Many of the early colony centers have now coalesced so that large areas of continuous distribution of the parasite now occur. As may be expected, the abundance of the parasite is varied over these areas, owing to differences in ecological conditions. However, in areas of short-cropped grass, such as golf courses, pastures, large estates, and cemeteries, which are also most favorable for beetle development, this parasite is often found in such abundance as to be an important controlling factor of the Japanese beetle; in fact this parasite is now more abundant in this country under favorable conditions than it is in its native land under similar conditions. An idea of the abundance of T. vernalis females at some of the older colonies may be obtained from the following data on collections of females for recolonizing purposes (table 1).

1/

J. L. King: Colonization of Japanese Beetle Parasites in the Eastern States in 1938. (Insect Pest Survey Bull. V. 19, sup. to No. 1. March 15, 1939).

Table 1.--Collection of T. vernalis, females only, at older colonies

Year of collection	Colonies used for collection	Collectors, maximum	Total man-hours spent in actual collecting	Total females collected
	Number	Number	Number	Number
1938 -----	14	11	393	32,293
1939 -----	17	13	274	14,813
1940 -----	10	8	212	19,745

The history of one of the oldest colonies of T. vernalis, namely, that in the Philmont Country Club area, is also interesting. This colony, started in 1927, is now well within the older area of infestation where beetle abundance has subsided and where the type A milky disease (Bacillus popilliae) has long been established and has a high incidence of occurrence. Yet, notwithstanding these factors and reduction by intense annual collections of females for colonization purposes, this colony has produced a total of 63,468 females which have been used in the further distribution of the species, as shown by table 2.

Table 2.--Collection of T. vernalis females at the Philmont Country Club (colony released in 1927)

Year of collection	Females collected
	Number
1931 -----	167
1932 -----	4,627
1933 -----	5,391
1934 -----	8,778
1935 -----	8,109
1936 -----	1/ 7,198
1937 -----	9,478
1938 -----	18,359
1939 -----	2/ 0
1940 -----	2/ 1,361
Total -----	63,468

1/ Percentage of parasitization in this area in 1936 was 58.4.

2/ Owing to objections raised by property owners, no collections were made in 1939, and only very limited collections in 1940, although there was no noticeable reduction in the Tiphia population observable in either year.

Parasitization of Japanese beetle larvae by T. vernalis.—Four surveys have been conducted to determine the effectiveness of T. vernalis

as a parasite of Japanese beetle grubs. Owing to the fact that the activities of this parasite are hidden under the soil and soil surveys are necessarily limited in scope, it is believed that the surveys are only an indication of the effectiveness of the species. The great abundance of males and females during the mating flights of this species certainly indicates a greater degree of potential parasitization than these few surveys indicate. The results of the surveys are shown in table 3.

Table 3.--T. vernalis parasitization surveys

	: Year :	: Average :	Total :	
Colony site (all : of : Area : grubs per: grubs : Parasitized in Pennsylvania) : survey: dug : sq. ft. : recovered: grubs				
	:Sq. ft.:	Number	Number	Number:Percent
Overbrook Country Club ^{1/}	1937: 565	0.9	492	179 : 36.4
Rushland ^{2/} -----	1935: 200	5.7	1,146	702 : 61.3
Do -----	1936: 200	4.9	817	388 : 47.5
Do -----	1939: 200	5.3	1,054	506 : 48.0
Philmont Country Club -	1936: 200	5.7	1,142	668 : 58.5

1/

The Overbrook colony is considered to be within the older area of infestation, where beetle abundance has subsided, and we believe this has been largely due to grub parasitization by T. vernalis. In the year 1936, prior to this survey, Tiphia was extremely abundant, 7,382 females being taken from this area. At the time of the survey the milky disease type A. incidence was 17 percent.

2/

The Rushland colony is in a pasture approximately on the border of the area of moderate infestation. Only minor collections of Tiphia have been made at this point. The incidence of disease is unknown, but it is believed to be present.

Interrelation of T. vernalis grub parasitization and milky disease.--

The active period of parasitization by T. vernalis is from mid-May to about June 20, the Tiphia thus attacking the larval population at its lowest point, after the high disease mortality of the previous summer and fall. If disease is present, its development during the spring period of Tiphia activity is so slow, owing to unfavorable soil temperatures, that it does not compete seriously with T. vernalis. It is true that some overlapping does occur and that Tiphia will oviposit on diseased grubs but, if the disease is not in its final stages, most of the parasites will complete their development, as they are immune to the effects of the organism. Other species of Tiphia which are active during the latter part of the summer and early fall, when soil temperatures are most favorable for disease development, may be reduced in numbers by the death of diseased parasitized hosts.

Colonization of T. vernalis.--A total of 1,422 colonies of this species have now been distributed in 9 States and the District of Columbia. Of these 150 were released in 1940. The New York (Geneva) and

Connecticut Agricultural Experiment Stations cooperated in the distribution of the colonies in their respective States. No colonies were distributed in Maryland in 1940, but 2,500 females (the equivalent of 25 colonies) were collected for the use of authorities of the University of Maryland for use in mass rearing of the species. Table 4 gives a complete summary of all liberations to date, including those of 1940.

Tiphia popilliavora, the summer Tiphia.--This parasite from Japan was first released in 1921. Although it has been extensively colonized throughout the heavily infested area, it has never reached the degree of abundance manifest with the preceding species. It is active from mid-August to about the first week in September. Frequently the parasite suffers reduction through the lack of sufficiently developed host larvae at the time of egg laying. When most of the eggs are laid on second-stage host grubs the developing parasites are predominantly males, the normal sex ratio occurring only when most of the eggs are laid on third-stage host grubs. There are now 709 colonies of this species distributed in 7 States. Because of unfavorable conditions for the collection of this species which have obtained for the last 3 years, no colonization of this species was carried on in 1940. Table 5 gives the present distribution of this species.

Tiphia popilliavora (Korean strain).--This racial form of the species is from Chosen (Korea). It has received more attention in recent years because of its later emergence, being present in the field from late in August to mid-September. The later emergence of this strain has an advantage in that it is better synchronized with the proper stage of its host, overcoming in part the difficulties met with in the type or Japanese strain. After a number of years in the field it has been found to retain the habit of late emergence. There have been 37 colonies of this species released to date and checking in 1940 indicates that at least 40 percent of these releasements have become established. Table 6 shows the distribution of this form.

Tiphia popilliavora (Chinese strain).--In an effort to obtain better synchronization with host, a later emerging Chinese race or strain of T. popilliavora was introduced between 1927 and 1929, 22 colonies comprising 4,130 individuals being released in New Jersey and Pennsylvania. Only 1 feeble establishment was noted in 1929 and again in 1930. The species has not since been recovered.

Centeter cinerea.--This parasite originated in Japan, where it is an important parasite of the adult Japanese beetle. The species has become established in the Eastern States, and in Pennsylvania and New Jersey is found continuously distributed over approximately 500 square miles. Within this area it has not assumed importance in controlling the beetle because it is not well synchronized with its host, by far the greater number of parasites emerging about 2 weeks too early. The habit of early emergence seems to occur even in the most northern and southern limits of distribution. Centeter has been colonized with 25 colonies in 5 States and the District of Columbia. Table 7 shows the present distribution of this parasite.

Dexia ventralis.--This parasite was colonized at intervals between the years 1926 to 1938, during which time 15,254 individual parasites were distributed in 14 colonies. Though 5 States were selected, representing a varied number of habitats, only 1 colony at Haddonfield, N. J., has ever been recovered; this colony seems to sustain itself feebly. The species has 3 broods per year, with the second or summer brood emerging at a time when Japanese beetle larvae are very scarce. It was thought that, as the species is not specific in host selection, it would do well in areas where native Phyllophaga larvae could act as alternate hosts; however, attempts to establish it in such areas have thus far proved unsuccessful. The distribution of releasements by States is as follows: New Jersey, 3; Pennsylvania, 5; Illinois, 4; Maryland, 1; New York, (Long Island), 1.

Prosenia sibirita.--This parasite of Japanese beetle larvae has been released in numbers totaling 12,364 individuals, distributed in varying numbers in 5 releasements between 1923 and 1930. Only 1 colony in the Moorestown, N. J., area is known to be established. No recent colonization of the species has been undertaken. In Japan, its native habitat, the parasite is most numerous in areas where Popillia has a partial 2-year life cycle. The species seems to be of little value in the United States at the present time, although as yet no area in the infested portions of this country has been found where there is definite evidence of 2-year life cycle of the host.

Table 4.--Liberations and recoveries of Tiphia vernalis, a Japanese beetle parasite

	Colonies released in															Recovery of		Percentage:	
																colonies 3 years:		old or older	
																Number:		Status:	
																colonies:		recovery of:	
State and county	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	scouted	colonies	scouted	1926-40
Connecticut:																			
Fairfield	--	--	--	--	--	--	--	--	--	--	3	2	9	12	10	3	3	--	36
New Haven	--	--	--	--	--	--	--	--	--	--	1	2	1	8	1	2	2	--	13
New London	--	--	--	--	--	--	--	--	--	--	--	1	1	1	--	--	--	--	3
Hartford	--	--	--	--	--	--	--	--	--	--	--	--	3	4	3	--	--	--	10
Windham	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	1
Total	--	--	--	--	--	--	--	--	--	--	4	5	15	25	14	5	5	100.0	63
Delaware:																			
New Castle	--	--	--	--	--	--	--	--	5	6	22	5	--	6	5	5	5	--	49
Kent	--	--	--	--	--	--	--	--	--	--	4	--	--	4	3	--	--	--	11
Total	--	--	--	--	--	--	--	--	5	6	26	5	--	10	8	5	5	100.0	60
District of Columbia:																			
Washington	--	--	--	--	--	--	--	--	1	--	--	--	--	--	8	1	0	--	9
Total	--	--	--	--	--	--	--	--	1	--	--	--	--	--	8	1	0	12.5	9
Maryland:																			
Baltimore City	--	--	--	--	--	--	--	--	1	--	3	--	--	--	--	1	1	--	4
Cecil	--	--	--	--	--	--	--	--	1	--	3	24	179	5	--	7	7	--	212
Dorchester	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	1
Frederick	--	--	--	--	--	--	--	--	--	--	1	--	--	5	--	--	--	--	6
Washington	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	1
Kent	--	--	--	--	--	--	--	--	--	--	--	--	40	5	--	--	--	--	45
Harford	--	--	--	--	--	--	--	--	--	--	--	--	39	7	--	--	--	--	46
Baltimore	--	--	--	--	--	--	--	--	--	--	--	--	38	5	--	--	--	--	43
Wicomico	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	2
Worcester	--	--	--	--	--	--	--	--	--	--	--	--	1	3	--	--	--	--	4
Somerset	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	1
Howard	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	2
Prince Georges	--	--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	3
Anne Arundel	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	2
Queen Anne	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	2
Talbot	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	1
Total	--	--	--	--	--	--	--	--	2	--	9	24	300	40	--	8	--	100.0	375

Table 4.--Liberations and recoveries of Tiphia vernalis, a Japanese beetle parasite--Continued

State and county	Colonies released in															Recovery of		Total
																: colonies 3 years		
																: old or older		
																: recovery of:		
	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	Number	Status	colonies
																scouted	in 1940	scouted
Massachusetts:																		
Hamden							1	1				1				2	1	
Total							1	1				1				2	1	50.0
New Hampshire:																		
Cheshire												1				1	1	
Merrimac											1					1	1	
Strafford											1					1	0	
Total											2	1				3	2	66.6
New Jersey:																		
Atlantic																		
Burlington	1		2	1	1			9		4						23	12	
Camden		2						6								9	9	
Cape May											2							
Cumberland										5						5	4	
Gloucester								6		3						10	6	
Hunternon										16	20	2		7	16			
Mercer								5	24	6						46	23	
Middlesex									1	7	5	9				2	2	
Monmouth									2	10						12	7	
Ocean									3	1						4	0	
Salem								2	10	1	5					13	7	
Somerset									1	5	12	11		2	6	6	4	
Union												18				2	2	
Morris													1		3			
Bergen															6			
Essex															1			
Total	1	2	2	1	1		12	62	49	60	59	40		10	33	132	76	57.5

Table 4.--Liberations and recoveries of *Tiphia vernalis*, a Japanese beetle parasite--Continued

State and county	Colonies released in															Recovery of		: colonies 3 years: Percentage:		: old or older : recovery of:		: Number : Status : colonies : Total																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	1926:1927:1928:1929:1930:1931:1932:1933:1934:1935:1936:1937:1938:1939:1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted	in 1940:	scouted

Table 5.---Liberations and recoveries of *Tiphia popillivora*, a Japanese beetle parasite

State and county	Colonies released in.														Recovery of		Total 1921-40
															colonies 3 years:		
															old or older		
	1921:	1922:	1925:	1927:	1928:	1929:	1930:	1931:	1934:	1935:	1936:	1937:	1938:	1939:	1940:	Status scouted:	colonies in 1940:
Connecticut:																	
Fairfield												3	11			3	14
New Haven					1							1	3			2	5
Hartford												1	2			1	3
New London													1				1
Windham													1				1
Total					1							5	18			6	83.4
Delaware:																	
New Castle									4	5	14	8				4	31
Total									4	5	14	8				4	50.0
Maryland:																	
Cecil									1	3		7	34				45
Harford													24				24
Kent													2				2
Dorchester													1				1
Somerset													1	2			3
Washington													1				1
Worcester														3			2
Prince Georges														1			3
Queen Anne														1			1
Caroline														1			1
Wicomico														1			1
Anne Arundel														1			1
Total									1	3		7	64	10			85

Table 5. Liberations and recoveries of *Tiphia popillivora*, a Japanese beetle parasite--Continued

State and county	Colonies released in																			Recovery of		Total colonies : 1921-40
																				colonies 3 years : old or older		
	1921	1922	1925	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	Number : scouted	Status : in 1940	Percentage : recovery of :		
New Jersey:	2	1	1	4	12	24	--	13	5	5	--	--	--	--	--	--	65	32	--	67		
Burlington	--	--	--	2	2	1	1	2	--	1	--	--	--	--	--	--	8	4	--	9		
Camden	--	--	--	1	--	14	--	1	--	7	--	--	--	--	--	--	18	3	--	23		
Gloucester	--	--	--	--	--	--	--	--	--	4	14	--	--	--	--	--	4	1	--	18		
Hunterdon	--	--	--	--	1	1	--	4	37	5	1	--	--	--	--	--	44	17	--	49		
Mercer	--	--	--	--	--	--	--	--	3	2	--	--	--	--	1	--	5	0	--	6		
Middlesex	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	1		
Monmouth	--	--	--	--	--	--	--	5	--	15	--	--	--	--	--	--	10	1	--	20		
Salem	--	--	--	--	--	--	--	--	3	24	2	2	--	--	--	--	17	5	--	31		
Somerset	--	1	1	7	15	40	1	25	48	64	17	2	--	--	1	--	171	63	36.8	224		
Total	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
New York:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Nassau	--	--	--	1	1	--	--	--	--	--	--	--	--	--	--	--	2	0	--	2		
Queens Borough	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	1	0	--	1		
Westchester	--	--	--	--	--	--	--	--	--	--	--	--	12	18	--	--	--	--	--	30		
New York City	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	1		
Total	--	--	--	1	2	--	--	--	--	--	--	--	12	19	--	--	3	0	00.0	34		
Pennsylvania:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Bucks	--	--	--	1	4	22	--	5	31	41	3	--	--	--	--	--	91	54	--	112		
Chester	--	--	--	--	--	--	1	--	15	5	4	3	--	--	--	--	20	10	--	28		
Cumberland	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	1		
Dauphin	--	--	--	--	--	1	--	--	1	--	--	--	--	--	--	--	1	0	--	2		
Delaware	--	--	--	--	4	10	--	--	38	--	--	--	--	--	--	--	52	38	--	52		
Montgomery	--	--	--	--	7	19	--	13	46	15	--	--	--	--	--	--	87	56	--	100		
Philadelphia	--	--	--	2	--	9	--	--	--	1	1	--	--	--	--	--	11	9	--	13		
Total	--	--	--	3	15	61	1	18	132	62	13	3	--	--	--	--	262	167	63.9	308		
Virginia:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Chesterfield	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	1		
Norfolk	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	1		
Northampton	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	1		
Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	3		
Grand total	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
																	446	237	53.1	709		

Table 6.--Liberations and recoveries of *Tiphis popilliavora* Roh. (Korean strain),
a Japanese beetle parasite

State and county	Colonies released in										Recovery of		
											colonies 3 years:		
											old or older : recovery of:		
	1927:	1934:	1935:	1936:	1937:	1938:	1939:	1940:	scouted:	in 1940:	scouted:	colonies :	Total
Delaware:													1927-40
New Castle----	--	--	--	--	3	--	--	--	3	0	--	--	3
Total-----	--	--	--	--	3	--	--	--	3	0	00.0	--	3
Maryland:													
Cecil-----	--	--	--	--	1	--	--	--	1	0	--	--	1
Total-----	--	--	--	--	1	--	--	--	1	0	00.0	--	1
New Jersey:													
Camden-----	1	1	--	--	--	--	--	--	2	1	--	--	2
Hunterdon----	--	--	4	--	--	--	--	--	4	1	--	--	4
Mercer-----	--	--	1	--	--	--	--	--	1	1	--	--	1
Middlesex----	--	--	--	1	--	--	--	--	1	1	--	--	1
Somerset-----	--	--	--	2	3	--	--	--	5	0	--	--	5
Total-----	1	1	5	3	3	--	--	--	13	4	30.7	--	13
Pennsylvania:													
Montgomery----	--	--	3	--	--	--	--	--	3	3	--	--	3
Philadelphia----	--	--	1	--	--	--	--	--	1	0	--	--	1
Delaware-----	--	1	--	--	--	--	--	--	1	1	--	--	1
Chester-----	--	--	--	6	2	7	--	--	8	4	--	--	15
Total-----	--	1	4	6	2	7	--	--	13	8	60.0	--	20
Grand													
total----	1	2	9	9	9	7	--	--	30	12	40.0	--	37

THE MORE IMPORTANT RECORDS FOR MAY

The grasshopper situation in the extreme Southwest now indicates that populations are lighter than expected and, even where abundant, have not migrated into crops on account of heavy growth of vegetation on field margins. Hatching is well completed with several species and the two-striped has begun hatching. Rather heavy populations are reported from parts of western Oklahoma and Kansas and extreme southwestern Oklahoma. However, in general, crop conditions are better than usual in these areas and, since there is luxuriant marginal vegetation, only a minimum of hopper damage may occur. In northwestern North Dakota and south-central South Dakota rather heavy populations were observed during the month.

Mormon cricket infestations have been unusually heavy in eastern Washington and Oregon, and crickets are now in the adult stage. No appreciable damage had occurred in Oregon up to the middle of the month, owing to control activities. Large bands of fifth-instar Mormon crickets have been reported migrating in Lyman County, S. Dak. A heavy infestation was observed during the latter half of the month in the Beaverhead National Forest, in Montana. Cricket infestation in western Idaho is greater than was anticipated.

The first outbreak of the cutworm Nephelodes emmedonia violans Hbn. in 40 years is reported from Connecticut. The usual spring reports on cutworms have been received from many parts of the country. This damage was so severe in parts of Hidalgo County, Tex., that replanting of cotton was made necessary. Similar damage is reported from the Phoenix area of Arizona.

Scattered outbreaks of army cutworm and the armyworm are reported from Wyoming, Utah, Texas, Oklahoma, and Idaho. During the last week in the month the fall armyworm appeared in parts of Georgia and Mississippi.

Serious damage by the green June beetle larvae to tobacco seedbeds is reported from Pennsylvania, Ohio, and Tennessee.

The first white-fringed beetle of the season was reported on May 13 in New Orleans.

The first codling moth adults of the season were observed in New York on May 8, in Pennsylvania on May 5, in Delaware on April 29, in Georgia on April 28, in southern Ohio on May 5, in Indiana on April 29,

and in Kansas on May 5. The peak of emergence was reached in New York on May 15 and in Delaware between May 13 and 19. In the East Central States emergence has been rather heavy and considerable infestation of apples by larvae is being reported.

Heavy defoliations of both wild plants and apples by the eastern tent caterpillar is reported along the Atlantic seaboard from Connecticut to Maryland and westward to Ohio, Illinois, and Tennessee.

The fruit leaf roller is reported as abundant in the Hudson Valley of New York, and in western Illinois and central Missouri.

Fruit aphids generally below normal throughout the East and East Central States.

European red mite hatched earlier than usual throughout New England and the Middle Atlantic States and westward to Michigan.

The peak of emergence of plum curculio from dropped fruit occurred on May 10, 11 days earlier than last year. The midseason variety of peaches in the Fort Valley area will probably be subject to a second-brood attack. This insect is being reported in rather large numbers from New England and the Middle Atlantic States.

More California citrus groves are seriously infested by citricola scale than in several seasons. Rather heavy infestations of citrus rust mite were reported from Florida, Texas, and California.

Vegetable weevil was damaging tomatoes and spinach plants in the Uvalde area during the latter part of the month. This is the first report from this section. It is also seriously damaging truck crops in Harris and Brazos Counties. Rather general damage was found throughout a large part of Mississippi.

Severe damage to corn by the spotted cucumber beetle was reported from Mississippi. This insect was also reported as attacking corn in Georgia and seedling melons and corn in Utah.

Severe infestation of potatoes by the Colorado potato beetle is reported along the Atlantic seaboard from Virginia to Florida.

Corn ear worm was damaging tomatoes during the first week in the month in Texas. Eggs were fairly abundant in South Carolina by the middle of the month and the adults were observed in Virginia during the last week of May.

Mexican bean beetles appeared during the first week in the month in Georgia and about the middle of the month in Ohio.

Heavy infestation of pea aphid on alfalfa and vetch appeared in the Norfolk area during the early part of May. Early peas, however, were early enough to escape injury. This insect is reported quite generally

from the Atlantic and East Central States. Very heavy infestations are reported from Wisconsin and Missouri. They were also damaging alfalfa in the Southwest and the Great Basin.

Boll weevil survival is reported as considerably higher than usual throughout the entire boll weevil area. In south-central and north-central Texas higher populations passed the winter successfully than has been the case in the last 16 years.

Considerable damage to young cotton plants by flea beetles is reported from Georgia.

The beet armyworm is reported as severely damaging cotton in Arizona.

A larva of the cotton leaf worm was collected from cotton 25 miles southwest of Matamoros, Mexico, on May 9. First report on this insect for the season.

Heavy infestations of cankerworm with spotted outbreaks where complete defoliation occurred were reported from the New England States and Middle Atlantic States westward to Minnesota and the Dakotas and southward to Tennessee and Oklahoma.

Elm leaf beetle was generally annoying in households in New England and the Middle Atlantic States. Egg laying was observed in Maryland on April 24 and in New Jersey on May 7.

Unusually heavy infestation of ornamental junipers by the juniper webworm was reported from Pennsylvania, Maryland, and Delaware.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

Arizona. B. M. Gaddis and assistants (April 21-26): Hatching of Melanoplus mexicanus Sauss., the only grasshopper of major importance in crop areas of Maricopa and Yuma Counties, is practically complete. Infestations in the Roll-Wellton district of Yuma County are general and severe in some fields; however, in other sections of the county only scattered localized infestations exist. Very few fields in Maricopa County have threatening-to-severe infestations. (April 27-May 3): Fifteen percent of M. mexicanus have reached the adult stage, while in Maricopa County the range in nymphal development is from first to fifth instar. Grasshopper damage in the afore-mentioned counties is becoming more evident; in several fields of the Roll-Wellton district, damage to alfalfa ranged from 5 to 100 percent. (May 4-10): Maricopa County grasshopper infestations are somewhat lighter than was expected but are much lighter than in 1940. A few first and second instars of M. differentialis Thos. have been observed during the past week. The range grasshopper (Trimerotropis pallidipennis Burm.) has moved into the vicinity of crops in this county but no damage has resulted. (May 11-17): Warm and dry weather in the southern portion of the State was favorable to rapid development of grasshopper eggs and nymphs during the week. M. mexicanus now comprises approximately 75 percent of the species present and M. differentialis from 15 to 20 percent. Most M. mexicanus are in the adult stage, while M. differentialis ranges from first to third instar.

Colorado.^{1/} (May 4-10): The hatch of M. mexicanus and Aeoloplus turnbullii Thos. was 50 percent complete in southeastern Colorado. Populations ranged from 5 to 50 per square yard in fields and from 10 to 150 per square yard on margins. (May 11-17): Weather conditions throughout eastern Colorado were highly favorable for egg and nymphal development. The dominant species in the irrigated areas are M. bivittatus Say, M. differentialis, M. mexicanus, and A. turnbullii, in the order named. In the dry-land farming areas, the species in order of importance at present are A. turnbullii, M. bivittatus, M. mexicanus, and M. packardii Scudd. The hatch is 65 percent complete in southeastern Colorado and 15 percent complete in the northeastern section of the State. M. bivittatus and M. differentialis comprise 60 percent of the grasshoppers in the irrigated-farming areas. Nymphs have not migrated into crops in large numbers, owing to the abundant vegetation available along field margins.

New Mexico. (April 21-26): Several first-instar M. mexicanus and one second-instar M. bivittatus were observed in an alfalfa field. (May 4-10): M. bivittatus was beginning to hatch in favorable habitats along the Rio Grande Valley. (May 11-17): Hatching of M. bivittatus

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Where no name is given after the State the report is by B. M. Gaddis and assistants.

is about 15 percent complete in the counties of central New Mexico. The hatch of M. mexicanus was estimated at 5 percent complete by May 16.

Texas. (April 21-26): A few newly hatched nymphs were reported in Hartley, Hutchinson, Hansford, Ochiltree, and Lipscomb Counties. Populations along margins of wheatfields in Lipscomb County ranges as high as 10 per square yard with 1 per square yard in most fields. The majority of nymphs observed were Aulocaro elliotti Thos. and A. turnbullii, with a few M. mexicanus. (May 4-10): First-instar nymphs of A. turnbullii and M. mexicanus were observed in the northern part of the Panhandle, the former being the dominant species. Populations were low except in Hansford, Ochiltree, and Sherman Counties, where concentrations along fence rows adjacent to wheat numbered up to 15 per square yard. (May 11-17): Populations are composed of 50 percent A. turnbullii and 30 percent M. mexicanus, and nymphal concentrations along wheatfield margins number 20 per square yard.

Oklahoma. (May 4-10): Scattered rains and continued cool weather throughout the Oklahoma Panhandle are causing a prolonged hatch. Populations ranged as high as 20 per square yard in part of Harper County and up to 6 per square yard in Beaver and Texas Counties. (May 11-17): A rapid increase occurred in the hatching of grasshoppers throughout the northwestern Oklahoma Panhandle. The hatch is now approximately 25 percent complete. A. turnbullii, the dominant species, is mainly in the second instar, with a few in the third. Most M. mexicanus are in the first instar. Populations as high as 50 per square yard, mainly A. turnbullii, were observed along margins of alfalfa fields in Harper County; the numbers present in Beaver, Cimarron, and Texas Counties are considerably lower.

Kansas. (April 27-May 3): Cool and rainy weather during the week retarded development of eggs. Considerable hatching, however, took place in the southwestern part of the State. In the more sandy areas as many as 15 to 20 nymphs per square yard were observed in idle fields and as high as 50 or more nymphs per square yard in margins. The hatch is estimated to be 5 percent complete, and 75 percent of the A. turnbullii are estimated to have hatched. A very small percentage of M. mexicanus have hatched, inasmuch as the pods of this species are generally buried more deeply; less than 10 percent of the nymphs observed were M. mexicanus. Practically all nymphs are in the first instar and are active and feeding on young Russian-thistle. (May 4-10): Weather conditions during the last week have been favorable for grasshopper development. Crop conditions are excellent and marginal vegetation is luxuriant, affording ample food and cover for grasshopper populations. In the southwestern part of the State A. turnbullii was 75 percent hatched and M. mexicanus 30 percent hatched, with both species being 75 percent first-instar, 20 percent second-instar and the remaining few, third-instar nymphs. M. mexicanus is the dominant species, followed closely by A. turnbullii. Populations range from 5 to 50 per square yard in the fields and from 10 to 150 per square yard on margins with abandoned land and depleted range being the chief sources of in-

festation. In northwestern Kansas A. turnbullii is 20 percent hatched and M. mexicanus 10 percent hatched. Nymphs are 95 percent in the first instar. (May 11-17): Throughout western Kansas, warm and dry weather during the week has been highly favorable to development of eggs and nymphs. In the southwestern corner of the State, in the area immediately south of the Arkansas River and extending from the western border of the State to Dodge City, approximately 400,000 acres have spotted infestations comprised of M. mexicanus and A. turnbullii. This sand-hill area has little vegetation except for sagebrush and Russian-thistle. The grasshopper hatch in the area is complete with the nymphs predominately in the second and third instars. Populations range as high as 75 per square yard; the area may become a reservoir from which light flights will develop. The hatch in the northwestern quarter of the State was about 30 percent complete, with A. turnbullii comprising 60 percent and M. mexicanus 30 percent of the grasshopper population. Nymphs are 60 percent first instar, 30 percent second instar, and 5 percent third instar. The heaviest infestations occur in small-grain stubble and in crop margins, the marginal populations ranging as high as 500 per square yard and averaging about 100 per square yard. Infestations in stubble average about 30 per square yard. Winter wheat which suffered heavy marginal destruction by second-generation M. mexicanus last fall was found occasionally infested along margins, with populations ranging as high as 300 per square yard. Populations of A. turnbullii, ranging as high as 500 per square yard along wheat margins, are denuding thistle and pigweed plants but to date have caused no damage to wheat.

Nebraska. (April 27-May 3): First-instar M. mexicanus nymphs were observed on April 30 in Keith, Chase, and Dundy Counties and on May 2 in Webster County, in southwestern Nebraska. (May 4-10): The hatch was less than 5 percent for western and central Nebraska, with M. mexicanus and A. turnbullii being the species involved. Populations ranged up to 10 per square yard. (May 11-17): Warm, dry weather during the week favored grasshopper development throughout all sections of the State. In western Nebraska the hatch by May 17 was estimated to be 75 percent complete, with A. turnbullii comprising 65 percent and M. mexicanus 25 percent of the species present. Approximately 65 percent of the above species were first instar, 25 percent were second instar, and 5 percent third instar. Populations along field margins ranged from 10 to 225 in counties just north of the Kansas line and from less than 1 to 12 in the northwestern counties. Grasshopper hatching in central and eastern Nebraska was well under way; the hatch of M. bivittatus was estimated about 50 percent complete, that of M. differentialis 15 percent, and that of M. packardii 5 percent. M. bivittatus were 50 percent first instar, 40 percent second, and 10 percent third. In the south-central portion of the State, hatching of all species is approximately 50 percent complete, with third-instar M. bivittatus and M. mexicanus and second-instar A. turnbullii present. Populations in central Nebraska range as high as 500 per square yard along field margins and from 1 to 30 per square yard in fields. In the Nebraska Panhandle, populations range from 5 to 135 per square yard in margins and as high as 10 per square yard in

fields. Abundant vegetation along field margins has held the grasshoppers and very little migration into fields has occurred.

D. B. Whelan (May 7): M. turnbullii and M. mexicanus were observed hatching in Dundy, Hitchcock, Redwillow, Furnas, Harlan, and Franklin Counties in the southern part of the State on May 7.

Iowa. B. M. Gaddis and assistants (April 27-May 3): M. mexicanus reported hatching on April 27, and M. bivittatus on May 3 in the vicinity of Ames, Story County. (May 4-10): M. mexicanus and M. bivittatus reported hatching in considerable numbers in the vicinity of Ames on May 8.

C. J. Drake (May 29): County agents are reporting grasshoppers, the two-striped and lesser migratory, as present in considerable numbers in all of the counties in the western part of the State, bordering the Missouri River. Heaviest infestation is in the northwestern part of the State. M. differentialis is hatching. Weather conditions have not taken a very large toll of newly hatched individuals.

Michigan. R. Hutson (May 21): M. mexicanus was hatching at Bridgman on May 7, and first and second instars of M. mexicanus, Camula pellucida Scudd., and Ageneotettix deorum Scudd. were observed in Clare, Montcalm, Isabella, Wexford, and Osceola Counties in the northern half of the State on May 13 and 14. Very few second-instar nymphs were observed.

Minnesota. A. G. Ruggles (May 19): Grasshoppers hatching generally in the northwestern part of the State, where a 90-percent hatch has occurred.

North Dakota. B. M. Gaddis and assistants (May 4-10): M. bivittatus and M. mexicanus began hatching in favorable situations in eastern and south-central North Dakota during the week. (May 11-17): Cool weather throughout eastern North Dakota retarded hatching during the week; however, the hatch is about 25 percent complete, with populations ranging from an occasional nymph to 15 per square yard along field margins.

F. G. Butcher (May 23): Eggs are hatching generally throughout infested areas with most acute developments appearing in the northeastern counties.

South Dakota. B. M. Gaddis and assistants (May 4-10): The hatch ranges from less than 5 percent in the northeastern part of the State to 20 percent in the east-central portion. M. mexicanus, M. bivittatus, and M. confusus Scudd. are the predominant species. Populations on margins range from 5 to 35 per square yard. (May 11-17): A rapid hatching of M. bivittatus and M. mexicanus occurred in the State during the week. Weather conditions were highly favorable for egg and nymphal development. In south-central South Dakota, the hatch of M. bivittatus and M. mexicanus is between 50 and 75 percent complete. Most of the grasshoppers are in the second instar, with marginal populations of 100 to 125 per square yard. No appreciable hatch of M.

differentialis has occurred. In the extreme southeastern part of the State, hatching is about 25 percent complete. Approximately 50 percent of M. mexicanus and M. bivittatus have hatched in the northeastern section of the State; M. differentialis is beginning to hatch.

H. C. Severin and G. I. Gilbertson (May 23): First large hatch of grasshoppers, about a 30-percent hatch, occurred on May 10 and 11. M. differentialis eggs are just beginning to hatch.

Montana. B. M. Gaddis and assistants (May 4-10): First hatching of M. mexicanus and M. bivittatus was observed in Big Horn, Rosebud, Treasure, and Yellowstone Counties, in south-central Montana, during the past week (May 11-17): Hatching of M. mexicanus, M. bivittatus, and M. differentialis is reported in south-central Montana; in some areas of Yellowstone County an estimated 50-percent hatch has occurred. M. bivittatus is the dominant species, with most of them in the second instar. Light hatches are reported in north-central Montana and a slight amount of damage to wheat crops is reported in the vicinities of Shelby and Dunkirk, in Toole County.

H. B. Mills (May 20): Hatching reported under way in Cascade, Chouteau, Garfield, Petroleum, Hill, Pondera, Toole, Valley, and Yellowstone Counties. Largest hatch reported from Pondera County in the northwestern part of the State.

Wyoming. B. M. Gaddis and assistants (May 11-17): Approximately 40 percent of the eggs of M. bivittatus have hatched in Washakie and Big Horn Counties in the north-central part of the State.

Utah. (April 27-May 3): First-instar grasshoppers are reported present in small numbers in the following counties: Iron, Beaver, Millard, Juab, in the western part of the State and Utah in the central part of the State. A light and general hatch is now occurring in many localities. Populations up to 10 per square yard can be found along woody field margins and fence rows on the drier bench lands of Utah and Juab Counties. A small portion of the nymphs have reached the second instar. (May 4-10): The beginning of a general grasshopper hatch was observed in southeastern and south-central Utah during the week. Populations of 5 per square yard were found in alfalfa fields in Grand, Emery, and San Juan Counties. M. mexicanus and M. bivittatus were the predominant species. Slight leaf damage has occurred along margins of alfalfa. (May 11-17): Weather conditions were generally unfavorable for grasshopper development in the central and northern parts of the State last week. On benchlands and foothill areas of Salt Lake, Davis, Weber, Box Elder, and Cache Counties, first instar M. mexicanus nymphs are present with populations ranging from 3 to 6 per square yard. There is no evidence of crop damage.

G. F. Knowlton and assistants (May, 1941): First-instar grasshoppers were found in Iron, Beaver, Millard, Juab, and Utah Counties, in the western part of the State, on May 3. By May 10 hatching over most of the State was general but light, nymphs being mostly in the first and

second instars. Hatching was most common on field and road margins and south slopes. Only injury observed was on May 10 at Elgin, on alfalfa-field margins. On May 22 a heavy hatch was occurring on some eggbeds near Minersville, as many as 300 nymphs per square yard being found. Among the species are M. differentialis, Aulocara ellioti Thos., and Hippiscus corallipes Hald. Parasitization by bee fly is marked, sometimes 8 per square foot, attacking unhatched eggs of Carmula pellucida Scudd. west of Ephraim, in central Utah.

Idaho. B. M. Gaddis and assistants (April 21-26): M. mexicanus and M. femur-rubrum Deg. are reported as beginning to hatch in the irrigated sections of the eastern part of the State. Second- and third-instar nymphs of Aulocara sp. were observed. (May 4-10): Egg concentrations of C. pellucida occur in the Ola section of Gem County, and in the Hill City area of Elmore County in the western part of the State.

Nevada. B. M. Gaddis and assistants (May 11-17): M. occidentalis Thos. was reported to be hatching in Smoky Valley, in the southern portion of Lander County, in the central part of the State, on April 28, which was 2 to 3 weeks later than in 1940 and from 4 to 5 weeks later than in 1939. First- and second-instar nymphs of M. occidentalis were observed in the Dunphy area of northern Eureka County on May 6. Carmula pellucida was hatching in Douglas County, southwestern Nevada, on May 14.

California. S. Lockwood (May 1): Grasshopper hatch has been reported as irregular from El Centro, Imperial County, in the southeastern part of the State. M. mexicanus now ranges from third-instar nymphs down to first instar, with the hatch incomplete. Infestations are considerably lighter than a year ago. M. mexicanus hatching is incomplete in Riverside County, and infestation is spotted and considerably lighter than last year. A severe infestation of M. devastator Scudd. and Oedaleonotus enigma Scudd. has occurred in the area from Arrowhead across north to Verdement in the Cajon Pass area, thence west around the foothills to Rialto, North Fontana, and close to Colton, all in San Bernardino County in the southern part of the State. Grasshoppers are confined to brush and range land. In the low elevations they run more than 100 nymphs to 10 sweeps of an insect net, even on an overcast day. Infestation is heavier than last year. M. devastator nymphs are first and second instars with an occasional third. O. enigma ranges from second to fourth. Range grasses are relatively high, which will hold the grasshoppers in place for some time. Inspections in Orange County show that M. devastator and O. enigma are present in the first and second instars on two ranches. These are relatively large areas and will need considerable attention. Inspections made last week in Los Angeles County show that the hatch is not far enough along to give a true picture. In Kern County, M. devastator nymphs have been reduced from one-half to one-third the number present last year. General infestation of lighter numbers than for the last 2 years occur from a ranch east of Edison, south along the foothills for approximately 30 miles past Comanchi Point.

S. Lockwood (May 15): Farther north foothill range lands in Colusa and Yolo Counties are now infested, with M. devastator ranging from

first to third instar, and accounting for approximately 25 percent of the infestation. O. enigma, in first to fourth instars, ranges from 5 to about 50 per square yard.

MORMON CRICKET (Anabrus simplex Hald.)

South Dakota. B. M. Gaddis and assistants (April 27-May 3): Second-instar Mormon crickets were reported at the Lower Brule Indian Agency in Lyman County in the south-central part of the State on May 1. Light populations of second- and third-instar crickets are reported in range-land areas in southeastern Mollotte and northeastern Todd Counties. (May 4-10): Small numbers of Mormon cricket nymphs have been found in Hand, Spink, Faulk, Hyde, Walworth, and Campbell Counties, of central South Dakota. Considerable numbers of third- and fourth-instar nymphs were reported in Lyman County. (May 11-17): Fifth-instar crickets are reported present in Lyman County. Populations range from 8 per square yard in Jones County to 150 per square yard in Lyman County. Between Reliance and Presho and on the Lower Brule Indian Agency, migrations are occurring.

H. C. Severin and G. I. Gilbertson (May 23): Mormon crickets began to hatch in the latter part of April and are now in the fourth or fifth instars. Definite banding is taking place. Considerable damage done to gardens in the Kennebec area.

Montana. B. M. Gaddis and assistants (May 4-10): Mormon crickets in the Black Butte, Geraldine, and Highwood Mountain areas of Chouteau County and in the Dover area of Judith Basin County in the central part of the State are in first to third instars. In Big Horn County in the southern part of the State migrations of third- and fourth-instar crickets have occurred in the Sioux Pass area, while bands of first-, second-, and third-instar crickets in that area have migrated very little. Cool weather has retarded development and migration of crickets in Yellowstone County. A check of the infested area of Meagher County showed crickets just beginning to hatch on May 9, with only first-instar nymphs found. (May 11-17): Nymphs are reported in the third, fourth, and fifth instars in Yellowstone County and migrations are becoming noticeable. A heavy infestation is present on the Beaverhead National Forest, Beaverhead County, in the southwestern part of the State.

H. B. Mills (May 20): Mormon crickets are reported hatching in Bighorn, Cascade, Chouteau, Meagher, Sanders, Yellowstone, and Beaverhead Counties in the western half of the State. In the southern area some have reached the fourth instar.

Wyoming. B. M. Gaddis and assistants (April 21-26): Mormon crickets in Sheridan County, in the north-central part of the State, are in the second and third instars, with most of them in the second. First-instar crickets are reported in Crook County, in the northeastern part of the State. Crickets are still hatching at the lower elevations in Hot Springs County, in the northwestern part of the State.

Idaho. (April 27-May 3): Infestations in Clark, Fremont, and Jefferson Counties, in eastern Idaho, are heavier than anticipated. The range of development is from first to third instar in Clark County and second to third instar in Jefferson and Fremont Counties at the lower elevations, while at the higher altitudes of Clark and Fremont Counties only 1 to 3 percent of the crickets have hatched; migrations are occurring in most areas. The range of development in the western counties of the State is from first to sixth instar with 40 percent in the fourth and 30 percent in the third. (May 4-10): Cricket infestation in western Idaho is confined to Washington and Elmore Counties, the infestation in Washington County being greater than was anticipated. Limited migrations are occurring in the Mayfield area of Elmore County. Crickets range from second to sixth instars, with 60 percent in the fourth. Mormon crickets in Jefferson, Bingham, Fremont, and Clark Counties, in eastern Idaho, are in the first to fourth instars, and hatching is not completed in the higher altitudes of Clark and Fremont Counties. Migrations have occurred in the lower altitudes of Clark and Fremont Counties and throughout Jefferson County.

Utah. G. F. Knowlton and H. F. Thornley (May 17): First- to fifth-instar Mormon crickets are now occurring in Tooele, Juab, and Utah Counties hatching areas, with some eggs still unhatched at higher elevations.

Nevada. B. M. Gaddis and assistants (April 27-May 3): Most of the crickets in Humboldt County the week ended April 26 were in first and second instars. In the Smith Creek area of Elko County, northeastern Nevada, the week closing May 3, most were in the third instar, with a few in the second and fourth.

Washington. B. M. Gaddis and assistants (April 27-May 3): Cricket populations in Franklin County in the southeastern part of the State range from 5 to 100 per square yard; 40 percent of the crickets are adult, 50 percent sixth and seventh instars, and 10 percent second to fifth instars. Migrations are heavy and some bands have moved into wheat-fields, causing slight damage. Crickets in the Goodnoe Hills area of Klickitat County range from fourth to seventh instars; infestations are spotted throughout the area. In Yakima County migrations of first to seventh instar nymphs are occurring in the Toppenish Mountains. (May 11-17): About 95 percent in Franklin County are in the adult stage. Very little migration has occurred during the last week, owing to the cool, rainy weather. Large numbers of sea gulls have appeared in the infested area of the county and are destroying some crickets.

Oregon. (April 27-May 3): Mormon crickets at the lower elevations of the Warm Springs area in Wasco and Jefferson Counties are 40 percent sixth instar, 50 percent seventh instar, and 10 percent adult. In the higher areas the percentages are equally divided among the fourth, fifth, sixth, and seventh stages. Large bands are reported on the high plateaus of the Mutton Mountains. No appreciable crop damage has occurred; however, range damage is reported in all areas. (May 4-10): Migrations were retarded the forepart of the week on account of rain. On the Warm Springs Indian Reservation, crickets are moving westward onto uninfested lands on the north side

of the Warm Springs River and in a southerly direction on the south side of the river. General migrations on the east side of the Deschutes River have been in an easterly direction. From 200,000 to 250,000 acres are infested and 50 percent of this area is classed as moderately to heavily infested. In the area south of the Warm Springs River, Mormon crickets are just entering the adult stage. (May 11-17): Crickets in Wasco and Jefferson Counties are 95 percent adult, with the remaining 5 percent in the sixth and seventh instars. There was little migration of cricket bands during the week, owing to the cool weather which prevailed in this area of the State.

COULEE CRICKET (Paranabrus scabricollis Thos.)

Oregon. B. M. Gaddis and assistants (April 27-May 3): Large bands are reported in Wasco County in the northern part of the State. (May 11-17): Crickets are ovipositing and scattering to new localities infesting an additional 2,000 acres in the last 10 days. Populations on the east side of the Deschutes River in those areas newly infested is less than 3 to the square yard. On the east side of the Deschutes River, crickets have damaged the foliage of cheat grass from 20 to 25 percent and the seed has been reduced from 60 to 70 percent. The damage is not general over the entire area.

FIELD CRICKET (Gryllus assimilis F.)

Nebraska. H. D. Tate (May 17): The field cricket was reported from Seward County on April 14.

Utah. G. F. Knowlton (May 17): Moderately abundant at Taylorsville, in Salt Lake County, and at Perry, in Box Elder County.

Nevada. G. G. Schweis (May 20): Outbreak reported on range land in Washoe County, in the northwestern part of the State, during the month. Exceedingly numerous.

CUTWORMS (Phalaenidae)

Maine. J. Hawkins (April 23): Larvae of several species, Agrotis bicarnea Guen. predominating, present at Monmouth in grass crops. (May 7): Many last-instar larvae and a few now in the pupal stage. (May 20): Moths of Agrotis ypsilon Rott. have been flying at Orono since May 8. More abundant than usual.

Connecticut. J. P. Johnson (May 22): Larvae of Nepholodes emmedonia violans Guen. were found along 22 miles of the Minitt Highway in the towns of Greenwich, Stamford, and New Canaan, in the southwestern part of the State. Feeding was from light to severe on over 50 acres of turf, and green grass was all eaten, leaving large brown areas. First outbreak in Connecticut known in over 40 years.

New York. N. Y. State Coll. Agr. News Letter (May): Cutworms are very plentiful in Rockland County where they are causing considerable damage to cabbage plots and tomatoes. Also doing a little damage in Niagara, Oneida, and Onondaga Counties.

Tennessee. G. M. Bentley (May 23): Cutworms have been noticeable in 95 counties, causing trouble to garden plants and field corn.

L. B. Scott (May 19): Unusually abundant in north-central part of State. Severely damaged corn and numerous reports have been received of damage to tomatoes, tobacco, and peppers.

Ohio. T. H. Parks (May 23): More than usual number of complaints received of cutworm damage to corn, onions, tomatoes, and beans in central Ohio.

Indiana. J. J. Davis (May 27): Damage to tomatoes and corn reported from various parts of the State during the last 2 weeks.

Kentucky. W. A. Price (May 26): Cutworms did considerable damage to corn in Graves, Carlisle, Davis, and McLean Counties.

Michigan. R. Hutson (May 21): Abagrotis alternata Grote has been numerous in the Fruit Belt north of Grand Rapids, occurring at Muskegon, Shelby, Ludington, Benzonia, and Traverse City. Paragrotis scandens Riley has been very numerous in many places in the southern end of the Fruit Belt, particularly about Saint Joseph, Benton Harbor, South Haven, Niles, and Paw Paw in the southwestern part of the State.

Minnesota. A. G. Ruggles and assistants (May 19): Sidenia devastator Brace, A. ypsilon, and the variegated cutworm, Peridroma margaritosa Haw., are common.

Kansas. B. M. Gaddis (April 27-May 3): Agrotis orthogonia Morr. reported causing some damage to spring grain.

H. R. Bryson (May 29): Cutworms in general have been more abundant over the State than for several years. The variegated cutworm may be found easily and has caused injury in gardens. The pale western cutworm, Agrotis orthogonia, was quite abundant in the western part of the State and was present in considerable numbers in seven counties in the southwest corner.

Texas. C. O. Gingrass (May 5): Cutworm damage was severe in sections of Hidalgo County, early cotton plantings being destroyed in many places.

Arizona. C. D. Lobert (May 20): Cutworms have been abundant since May 1 in Phoenix and the surrounding area. Prodenia sp. (probably orthogalli Guen.) is found in most of the cotton acreages. A. ypsilon and P. margaritosa were common on ornamentals, and Oncocnemis punctilinea Hampson is also present.

ARMY CUTWORM (Chorizagrotis auxiliaris Grote)

- Nebraska. B. M. Gaddis and assistants (April 21-26): Crop damage has apparently been light in all infested counties. Excellent growing conditions for crops have undoubtedly played an important part in holding down the amount of damage. One field examined in Banner County showed border damage extending 5 or 6 feet into the margin of the field, with from 5 to 11 cutworms present per foot of drill row. Other fields examined showed only slight marginal damage. Approximately 20 percent of the larvae were in the last instar and ready to pupate.
- Oklahoma. (May 11-17): Serious outbreaks of army cutworms were reported in wheat, oats, barley, and rye in Harmon, Jackson, Greer, Grady, Tillman, Cotton, and Kiowa Counties in the southwestern part of the State. Worms ranged from 30 to 35 per square foot in some areas but no extensive baiting has yet been done.
- Colorado. (April 27-May 3): Minor crop damage is reported to be taking place in new seedlings of alfalfa in Boulder, Adams, Jefferson, Weld, and Larimer Counties in the north-central part of the State; however, cutworms are not present in these areas in sufficient numbers to cause extensive damage. (May 11-17): Army cutworms were reported doing considerable damage to corn in Logan, Sedgewick, Phillips, and Yuma Counties, in northeastern Colorado. Alfalfa, spring grains, and truck crops also are being damaged slightly.
- Montana. H. B. Mills (May 20): The army cutworm is still doing a little damage in Phillips County, in the northeastern part of the State, and in Toole County, in the north-central part.
- B. M. Gaddis and assistants (May 4-10): From 2 to 10 army cutworms per square foot have been found in various regions of south-central Montana. Some damage has been reported to young alfalfa, winter wheat, and sugar beets.
- Wyoming. B. T. Snipes (May 21): Army cutworm outbreaks reported covering much of the State. Damage ranges from light in range land and alfalfa to heavy in wheat, some fields of wheat in Johnson County showing 100-percent loss.
- Utah. G. F. Knowlton and assistants (April 30): Army cutworm injury has been severe in alfalfa and wheatfields in Uinta, Beaver, Carbon, Grand San Juan, Sevier, Sanpete, and Morgan Counties. Pupation started in Carbon County on May 5.
- Idaho. B. M. Gaddis and assistants (April 21-26): An area of some 8,000 acres in the dry-farm section of Power County is infested. (May 4-10): Four hundred acres of wheat and alfalfa are infested in Jefferson County and approximately 25 percent of the crops in that area have been destroyed.

F. V. Owen (May 13): Specimens were found in an alfalfa field at Lesley, Butte County. (Det. by C. Heinrich.)

FALL ARMYWORM (Laphygna frugiperda A. & S.)

Georgia. O. I. Snapp (May 20): Abundant locally at points in South Georgia and attacking cotton, corn, tobacco, peanuts, cabbage, and other vegetables and grasses.

Mississippi. C. Lyle (May 24): First report of injury was received from T. F. McGehee on May 13 from Harrison County. Larvae were feeding in the bud of young corn.

Mexico. L. C. Fife and F. F. Bibby (May 29): At Matamoros, Mexico, opposite Brownsville, Tex., on April 23, 1941, insects on corn. (Det. by C. Heinrich.)

BEET WEBWORM (Loxostege sticticalis L.)

Minnesota. A. G. Ruggles and assistants (May 1): Large number in silken cocoons on top of the ground, as well as in the soil, in Baudette Township, Lake of the Woods County, in the northeastern part of the State. Large percentage of larvae are alive.

PAINTED LADY (Vanessa cardui L.)

Arizona. C. D. Lebert (May 15): Heavy migrations of caterpillars from Malva and other weeds into yards in the Phoenix area. Severe defoliation to some ornamentals resulted in many instances, chrysanthemums, lantana, and petunias suffering most. Larvae, crawling into and all over houses, are very annoying.

Utah. G. F. Knowlton and assistants (May): Butterflies were first noticed in Washington and Iron Counties in the southwestern corner of the State on April 24, when they were flying in a north to northeasterly direction. On April 29 they were observed in Uinta County, on the 30th in Tooele County, and by May 10 covered all of the counties in the northern half of the State, except Rich, Morgan, and Daggett. At higher altitudes and through some mountain passes, small numbers were still migrating toward the north on May 21, but most seen settled.

WIREWORMS (Elateridae)

New York. N. Y. State Coll. Agr. News Letter (May): Limonius agonus Say was reported as causing injury to corn, cabbage, cauliflower, and perhaps lettuce plants on Staten Island, and in Onondaga, Oneida, and Erie Counties.

Alabama. J. M. Robinson (May 23): Wireworms were found in peanuts at Elba in the southeastern part of the State.

- Iowa. H. E. Jaques (May): Wireworms reported as light to moderately abundant in scattered counties throughout the State.
- North Dakota. F. Gray Butcher (May 23): Wireworms have been responsible for severe spotted damage to cereal crops in Barnes County, in the southeastern part of the State, during the last 10 days.
- South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Wireworms have caused considerable trouble in the eastern and central sections of the State.
- Wyoming. B. T. Snipes (May 20): Wireworms are causing small spot damage to wheat in Sheridan and Big Horn Counties.
- Utah. G. F. Knowlton (May 14): Wireworms were found infesting sugar beet and tomato land on a farm west of Ogden, and on a farm at Benson, in Cache County.
- Washington. E. W. Jones (May 7): Larvae of L. californicus Mann. were found feeding on sugar beets, and larvae of L. canus Lec. were feeding on cabbage plants and seed onions at Walla Walla.
- Oregon. R. L. Post (May 20): Larvae attacked strawberry roots at Stayton, in the northwestern part of the State, in Marion County.

MAY BEETLES (Phyllophaga spp.)

- Mississippi. C. Lyle and assistants (May 24): May beetles sent in from Clay County on April 26. Reported by N. L. Douglass as feeding on pecan buds in Grenada County.
- Indiana. P. Luginbill (May 7): May beetle flights started somewhat earlier than usual. Some damage to tree foliage has occurred at Fillmore in the western part of the State. Usually occurs last week in May.
- Illinois. A. F. Satterthwait (May 24): P. implicita Horn began to appear in Japanese beetle traps at Urbana-Champaign on May 5, and P. futilis Lec. on May 20.
- Kentucky. W. A. Price (May 26): P. hirticula Knoch caused some stripping of pin and bur oaks in the Inner Bluegrass Region early in May.
- Wisconsin. T. R. Chamberlin (April): June beetles emerged in large numbers before May 1, earlier than any year since 1934. First emergence recorded was April 25. The streets, sidewalks, and gutters at Ripon, in the eastern part of the State, were said to be covered with thousands of beetles. (May 26): Large flights of beetles reported occurring in various localities. A terrific flight of P. tristis F. was reported at Baldwin about May 15, and a very large flight was reported from Viroqua at the same time. Large flights were also reported from Beaver Dam and Sturgeon Bay on May 19 and 20. At Sturgeon Bay

the sidewalks were covered with dead beetles which had been attracted to the lights on previous nights. In places they were more than one layer thick. Beetles have not been so abundant in southwestern Wisconsin where counts were made of beetles taken from host plants at Lamont, Linden, Gays Mills, Dane, Leeds, and Poynette. They appear much less numerous than in the previous A brood, that of 1938.

Minnesota. A. G. Ruggles and assistants (May): June bugs, first reported from Austin on May 10, are abundant in the southeastern part of the State.

Iowa. H. E. Jaques (May): Reported as light to moderately abundant in scattered counties throughout the State.

Missouri. A. C. Burrill (April 21-May 4): First June bug was noted at Jefferson City about April 21. Heavy noisy swarms of a middle-sized species arrived on the evenings of April 26, 27, and 28.

L. Hasenan (May 8): Very heavy flight of two or three species of June beetles occurring and they have done considerable damage, especially to the more tender new growth on fruit, forest, and shade trees in central Missouri. Reports indicate infestation general over the State.

Nebraska. H. D. Tate (May 17): Adults of P. crassissima Blanch., P. hirticula Knoch, and P. implicita Horn, were collected at Lincoln, in Lancaster County, during the week of May 11 to 17.

GREEN JUNE BEETLE (Cotinis nitida L.)

Pennsylvania. B. F. Coon. (May 3): Causing serious injury to young tobacco seedlings in seedbed about 11 miles southwest of Lancaster. Grubs appear nearly mature.

Ohio. T. H. Parks (May 23): Larvae reported destroying tobacco in seedbeds in Brown County, near Cincinnati, on May 10.

Tennessee. L. B. Scott (May 19): Larvae severely damaged tobacco plant beds in north-central part of State.

JAPANESE BEETLE (Popillia japonica Newm.).

Connecticut. J. P. Johnson (May 22): Lawns and turf damaged by grubs during April and May. The fairways of one golf course in Greenwich were severely damaged, grubs numbering 150 per the square foot.

New York. E. P. Felt (May 23): Pupae were reported from Rockland County.

Pennsylvania. B. F. Coon (May 24): Two adults were collected on plantain at Lancaster today for the first emergence record.

ORIENTAL BEETLE (Anomala orientalis Wtrh.)

Connecticut. J. P. Johnson (May 22): Lawns in localized areas of New Haven and West Haven have been severely damaged by grubs, which have been feeding since the first week in April.

A SCARABAEID (Anomala undulata Melsh.)

North Carolina. O. I. Snapp (May 17): Reported as very destructive to young peaches on a farm in the upper end of Stanly County. Almost all of the flesh had been eaten from the small green peach submitted from Albemarle.

ROSE CHAFER (Macrodactylus subspinosus F.)

Kentucky. W. A. Price (May 26): Very abundant and destructive on peaches in particular and vegetable crops in general in the south-central part of Kentucky.

WHITE-FRINGED BEETLE (Pantomorus leucoloma Boh.)

Louisiana. B. M. Gaddis and assistants (May): First adult of the season was reported on May 13, and the first one collected in a field emergence cage was reported on May 20, both in New Orleans. Two adults were also collected at a nursery.

GREEN PLANT BUG (Chlorochroa uhleri Stal)

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Severe outbreak has occurred in the western and northwestern parts of the State, where bugs wintered successfully in large numbers. Immense numbers of eggs have been laid.

Correction: Notes by H. C. Severin under Chlorochroa sayi on page 39 of the April 1, 1941, bulletin, and on page 304 of the August 1, 1940, issue, are now known to be C. uhleri.

SAY'S STINKBUG (Chlorochroa sayi Stal)

Montana. G. B. Mills (May 20): Found in significant numbers in Dawson, Prairie, and Hill Counties.

A SPITTLE BUG (Philaenus leucocephalus L.).

Delaware. L. A. Stearns (May 12): Prevalent throughout central and northern Delaware on alfalfa, clover, and various grasses.

Maryland. E. N. Cory (May 21): Present on clover at Easton and Woodbine.

C E R E A L A N D F O R A G E

WHEAT AND OTHER SMALL GRAINS

ARMYWORM (*Cirphis unipuncta* Haw.)

Maine. J. H. Hawkins (May 20): Moths have been flying at Orono, Penobscot County, since May 8 and are more abundant than usual.

Ohio. T. H. Parks (May 23): Adults, although not in abundance, were observed during the last 2 weeks at Columbus. No evidence of infestation.

Indiana. J. J. Davis (May 27): The moths were abundant at lights during the month of May.

Kentucky. W. A. Price (May 26): In late May, larvae were more abundant than usual in central Kentucky barley fields with prospects of local outbreaks.

Mississippi. C. Lyle (May 24): Larvae of the army worm were collected from oats and barley in Sunflower County, in the northwestern part of the State, on April 29.

Missouri. L. Haseman (May 26): No destructive infestations have been reported in spite of the earlier heavy flight of moths.

Oklahoma. C. F. Stiles (May 31): The armyworm has done considerable damage to rank wheat and oats throughout the southwestern portion of the State. The damage extends from the Red River to the Kansas border. The most heavily infested counties in the southwest are: Tillman, Jackson, Kiowa, Harmon, Grady, Washita and in the northwest, Blaine and Major. At the present time most of the worms have reached maturity and a number of pupae have already been found.

Texas. F. L. Thomas (May 13): The armyworm is attacking wheat, barley and, to a lesser extent, oats in the following counties: Collingsworth, Briscoe, Childress, Floyd, Motley, Cottle, Hardeman, Foard, Wilbarger, Wichita, Dickens, King, Knox, Baylor, Kent, Stonewall, Haskell, Throckmorton, Jones, Shackelford, Callahan, and Runnels..

HESSIAN FLY (*Phytophaga destructor* Say)

Indiana. D. W. LeHue (May 24): Examination of heavily infested fields of winter wheat near Lafayette, May 19 showed most of the larvae as matured with a few newly pupariated. Two fields showed 10 percent and 13 percent infestation, respectively.

Missouri. L. Haseman (May 26): Surveys throughout the State indicate an infestation in western half. Heavy infestations are scattered, but in some fields in southwestern Missouri, during the third week in May, it was reported that 80 percent of the straws were infested and 25 to

30 percent of the heads already lodging.

Nebraska. H. D. Tate (May 17): The first adult was observed in Gage County, in the southeastern part of the State, on April 16. Large numbers of "flax seed" were found in volunteer wheat on a farm in Lancaster County on April 24 but apparently none had emerged.

Kansas. H. R. Bryson (May 26): The hessian fly situation is more serious than it has been for several years. One report from Marshall County, in the northeastern part of the State, stated that some fields of wheat had been plowed up.

Oklahoma. C. F. Stiles (May 31): Hessian fly infestation has increased quite rapidly throughout the extreme northeastern portion of the State this year. The heaviest infestation is in Ottawa County. A few counties in some of the most heavily infested fields show that approximately 50 percent of the straws are damaged.

CHINCH BUG (Blissus leucopterus Say)

Ohio. T. H. Parks (May 23): Inspections of wheatfields in Madison and Union Counties, central Ohio, reveal adults present in some, but they are not considered abundant enough to cause trouble.

Indiana. C. Benton (May 24): Spring migration from hibernation quarters which started near Lafayette April 11 was practically completed May 1. Frequent cool rainy weather during May slowed activity of the bugs so that although mating was first observed in field April 28, the first eggs were not found till May 19 and a few first-instar nymphs May 23. By that date mating was quite general. Field counts in Tippecanoe County May 19 showed some fields of thin winter wheat to have moderate to heavy infestations of overwintering bugs. In Benton County counts May 22 showed generally moderate infestation with occasional heavy infestation of winter wheat and spring barley. Oat fields in both counties in the western part of the State showed only a trace of infestation.

Illinois. W. P. Flint (May 24): There is a moderate, scattered infestation over the central part of the State. Eggs were abundant on May 23, but no young have been observed.

Iowa. H. E. Jaques (May): There is a light to heavy infestation in most counties of the southwestern part of the State and a light to moderate infestation in a few counties in the southeastern and northwestern parts of the State.

Iowa. C. J. Drake (May 27): Overwintering bugs have practically completed migration to small grain, although a few may still be found in timbered areas and grass land. Heaviest infestations occur in the counties of Shelby, Harrison, Monona, and Crawford, in the western part of the State. Threatening populations, and much more spotted in nature, were found in scattered fields in all counties examined west of Polk, also in portions of Muscatine and Louisa Counties, in

the eastern part of the State. The highest populations were found in wheat and barley fields. Populations in oats were highly variable. Egg laying is in progress and it is easy to find eggs. Only three newly hatched bugs were observed. Weather conditions have been very favorable for migration and development.

Missouri. L. Haseman (May 26): Egg laying and hatching of the chinch bug was observed by G. D. Jones in southwestern Missouri during the third week of May. Movement of wheat has been later than usual throughout west-central, central, and north Missouri, and indications to date are that, in spite of reports of scattered heavy infestations and of a rather heavy carry-over of bugs in the western half of the State, the pest is not as threatening as expected.

Kansas. H. R. Bryson (May 27): The growing conditions have been conducive to the production of a rank growth of wheat. These conditions have retarded the chinch bugs' activities so that they do not threaten to become such a menace in the whole of the eastern two-thirds of the State as they did early in the spring. The area in which they are most abundant is that which includes the counties in the blue-stem region of the State. Frequent heavy rains in the southeastern counties have reduced their numbers considerably.

Oklahoma. C. F. Stiles (May 31): The infestation throughout northeastern Oklahoma is very spotted. In some fields there are as many as 20 adults per linear foot of drill row and some 100 to 150 nymphs while in other fields a mile or two away you have to search to find a single bug.

GREEN BUG (Toxoptera graminum Rond.)

Georgia. P. M. Gilmer (May 10): The green bug is still present in small grains in Tift County and has probably served to build up a high concentration of parasites.

ENGLISH GRAIN APHID (Macrosiphum granarium Kirby)

Virginia. F. W. Poos (May 3): Abundant on oats in southern Virginia.
(Det. by P. W. Mason.)

A SAWFLY (Dolerus spp.)

Ohio. T. H. Parks (May 23): Sawflies, while present every year in wheat, are much more abundant this year, being found in three south-central counties. There is no serious loss in prospect and the larvae are in the last-instar stage.

CORN

CORN EAR WORM (Heliothis ornigera Hbn.)

Florida. J. R. Watson (May 22): The corn ear worm has been doing about the usual amount of damage, working as a budworm in corn.

Texas. E. F. Pepper (May 21): Last year 500 acres of sweet corn at Elsa, Hidalgo County, in southeastern Texas, was treated for corn ear worm. This year 2,000 acres are being sprayed.

California. A. F. Howland (April 30): In the Indio (Imperial County) region 96 percent of the ears examined in untreated fields were infested with worms. Commercial damage amounted to about 15 percent. (Det. by A. F. Howland.)

R. Wilcox and A. F. Howland (May 14): In Yorba Linda, Orange County, in the southern part of the State, about 90 percent of the tassels in a field of Golden Cross sweet corn were infested with from first- to fourth-instar larvae. A few larger larvae were also present.

EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)

Massachusetts. A. I. Bourne (May 24): Pupation of the European corn borer began considerably earlier than normal - fully two weeks ahead of last year's record.

Connecticut. N. Turner (May 23): The warm weather in April caused unusually early pupation and first generation adults are already flying. No eggs were found on sweet corn at Mt. Carmel, in New Haven County, on May 21.

New York. L. A. Carruth (May 25): Spring development of the multiple-generation in eastern New York during May is at least 2 weeks in advance of the development observed during the preceding 2 years. Moth emergence began on Long Island about May 10 and in the Albany area on about May 15. In the latter area moth emergence had reached the 30 percent level by May 24, at which time one field was observed where egg masses were present at the rate of approximately 50 per 100 plants.

Maryland. C. Graham (May 10): Moths began to emerge in a cage at College Park today, in Prince Georges County.

Virginia. H. G. Walker and L. D. Anderson (May 28): Although large numbers of larvae overwintered and pupated in certain parts of Princess Anne County, eggs and young larvae are very difficult to find, probably being due to the dry hot weather.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus Zell.)

South Carolina. O. L. Cartwright (May 21): This borer is causing much more damage to corn than usual at Florence, in the eastern part of the State.

Florida. J. W. Ingram and E. L. Bynum (May 3): A considerable number of sugarcane plants had been killed near Gainesville.

CORN FLEA BEETLE (Chaetocnema pulicaria Melsh.)

Ohio. N. E. Howard (May 12): On May 4 flea beetles were seriously injuring $3\frac{1}{2}$ acres of sweet corn at Coal Run, in the southeastern part of the State. (Det. by H. S. Barber.)

Mississippi. M. L. Grimes (May 24): Damage to corn in Neshoba County by the corn flea beetle was reported.

SOD WEBWORMS (Crambus spp.)

Indiana. J. J. Davis (May 27): Sod webworms were reported damaging corn at Franklin, 20 miles south of Indianapolis, May 23. Numerous reports have been received since then from various localities and as far north as Renesselaer, 30 miles north of Lafayette.

Kentucky. W. A. Price (May 26): Sod webworms are destructive to corn late in May at Nicholasville, Jessamine County, and Calhoun, McLean County.

TOOTHED FLEA BEETLE (Chaetocnema denticulata Ill.)

Georgia. J. W. Ingram and E. K. Bynum (May 4): Flea beetles severely injured sugarcane on a farm near Cairo. (Det. by H. S. Barber.)

CORN ROOT APHID (Anuraphis maidi-radicis Forbes)

Kentucky. W. A. Price (May 26): The corn root aphid was found doing considerable damage to corn in Fayette and Jessamine Counties in central Kentucky on May 24.

Iowa. H. E. Jaques (May): The corn root aphid was found in Chickasaw and Keokuk Counties, in the eastern part of the State.

ALFALFA AND CLOVER

ALFALFA WEEVIL (Hypera postica Gyll.)

Ohio. T. H. Parks (May 16): The alfalfa weevil has been found in Gallia County, in the southeastern part of the State. Apparently the insect has been present for some time, as it is uniformly distributed in the northwestern part of the county. It has done little economic damage.

Utah. C. J. Sorenson (May 21): The alfalfa weevil has been found in larval, pupal, overwintered, and newly emerged adult stages at Toquerville and Saint George, in the southwest corner of the State. This is the first record in this section. Damage has been moderate on first-growth alfalfa in the heaviest infested fields. No apparent injury on second-growth alfalfa. (May 8): Larvae are doing considerable damage at Erda, Tooele, and Grantsville, in northern Utah.

G. F. Knowlton (May): The alfalfa weevil is moderately abundant in the northwestern section of the State as well as in Sanpete and Carbon Counties. The larvae are small. In some fields at Elgin injury is

severe, 30 larvae per net sweep being taken. The larval parasite is abundant at Taylorsville, as many as 6 per net sweep being taken.

Nevada. G. G. Schweis (May 20): The larvae are already feeding on the plants, with a large number of eggs still unhatched, in the western part of the State.

California. A. E. Michelbacher (May 22): The weevil is rather scarce in the northwest section of the San Joaquin Valley. On May 15, the number of larvae collected to the 100 sweeps of an insect net in the different fields ranged from 1 to 100, while the adult count ranged from 1 to 63. In the agricultural region adjacent to the San Francisco Bay the larval count on May 17 ranged from 1 to 87; the adult count ranged from 1 to 3. Parasitism, based on rearing out the parasites from last instar weevil larvae collected on May 6, was 98 percent for the San Joaquin Valley and 92 percent for the region adjacent to the San Francisco Bay.

CLOVER LEAF WEEVIL (Hypera punctata F.)

Maryland. F. F. Dicke (May 1): Injury by larvae was observed in a number of fields of red clover at Knoxville, Frederick County, in the northeastern part of the State. Pupation reduced the population some by May 1 and a fungus killed most of the remaining larval population.

E. N. Cory (May 5): Fungus is present on weevil at Bel Air. (Det. by E. N. Cory.)

Iowa. H. E. Jaques (May): The weevil is present in Keokuk and Davis Counties, in the southeastern part of the State.

C. J. Drake (May 29): In eastern Iowa the clover leaf weevil almost entirely defoliated a field of sweetclover near Muscatine during the early part of May. Other infestations of lighter nature were found near North Fairport in red clover and alfalfa. Small infestations were also observed near South Buffalo.

Utah. G. F. Knowlton and assistants (May): On May 2 clover leaf beetles were causing severe injury to some alfalfa and clover at Orem in Utah County. Damage is also occurring in Box Elder, Davis, Salt Lake, and Sanpete Counties.

A WEEVIL (Hypera brunneipennis Boh.)

Arizona. W. C. McDuffie (May 29): In the Yuma Valley egg and larval populations of the legume weevil were inconsequential by the early part of April; however, cocoons were numerous most of April and the peak of new-generation adults obtained during the latter part. Earliest emerging new adults began migrating from fields in search of aestivating quarters early in April, but the greatest exodus occurred late in April and early in May. By mid-May only an occasional adult or larva could be collected in course of fields sweepings, which in-

icated that the active season was complete. New-generation adults are now in aestivation and will remain inactive until late in November and early in December. Owing to the abundance of sour clover the past season and the heavy production of adults on this host, adult populations are considered larger than at any time since the discovery of the weevil in 1939. It is believed, however, that populations are insufficient to cause more than slight damage to a few alfalfa fields adjacent to most heavily populated aestivating sites.

SWEET CLOVER WEEVIL (Sitona cylindricollis Fahr.)

Illinois. W. P. Flint (May 24): The sweetclover weevil has caused heavy damage in the northern fourth of the State. Adults have been taken in about the northern half of the State. No commercial damage has occurred, except in the northern fourth to third.

Minnesota. A. G. Ruggles (May 19): The sweetclover weevil is quite abundant around Saint Paul and Minneapolis.

North Dakota. F. G. Butcher (May 23): A weevil tentatively identified as the sweetclover weevil has been reported in northeastern Pembina County near the Canadian border. Apparently this is the first record although evidences of its injury have been observed during the last few years. A few young sweetclover fields have been seriously injured by the adults.

CLOVER ROOT WEEVIL (Sitona flavescens Marsh.)

Michigan. R. Hutson (May 21): The clover root curculio has been very troublesome, feeding on sweetclover on the experimental plots at East Lansing.

CLOVER SEED CATERPILLAR (Laspeyresia interstinctana Cten.)

Delaware. J. M. Amos (May 19): A field of red clover at Townsend, in New Castle County, was severely damaged by the clover seed caterpillar. About 70 percent of the buds contained larvae which were one-half to full grown. An occasional pupa was found. Examination of a field near Dover, Kent County, showed the insect present but not quite so numerous.

ALFALFA CATERPILLAR (Colias eurytheme Bdv.)

Utah. G. F. Knowlton and assistants (April 30): Alfalfa butterflies are present in the Uinta Basin.

California. A. E. Michelbacher (May 22): In the northwest portion of the San Joaquin Valley larvae are increasing in numbers. On May 15 the number collected in the different fields ranged from 0 to 18. In the area adjacent to the San Francisco Bay the larvae are still scarce. Only a very few larvae were found to be parasitized.

COWPEAS

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

South Carolina. W. M. Upholt (May 17): A few adult curculios were active in outdoor hibernation cages by April 28 at Clemson, in the north-western part of the State.

COWPEA WEEVIL (Callosobruchus maculatus F.)

Georgia. T. L. Bissell (May 15): Adult cowpea curculios are emerging very rapidly from hibernation to trap-cowpea plants.

VETCH

VETCH BRUCHID (Bruchus brachialis Fahr.)

Maryland. E. N. Cory (February 13): Reported from Rhodesdale, in Dorchester County, in vetch seed. (Det. by U. S. Nat. Museum.)

Virginia. F. W. Poos (May 6): This species was quite abundant on vetch at Suffolk. An average of 7 adults were collected in each 20 sweeps of the insect net.

A WEEVIL (Sitona lineata Lec.)

Washington. L. G. Smith (May 10): The county of San Juan recently sent in a report that Sitona weevil, discovered for the first time there last season, was causing damage to peas and vetch. T. A. Brindley, of the Pea Weevil Laboratory at Moscow, and the writer made a survey of the Island to determine the extent of damage on April 23, 1941. There was a heavy infestation of the weevil in all Austrian winter field peas, Canadian peas, and vetch seed fields. Garden peas in home gardens were severely damaged. Damage was particularly severe on spring peas and vetch.

GRASS

MEADOW PLANT BUG (Miris dolabratus L.)

Kentucky. W. A. Price (May 26): The plant bug has been very numerous on bluegrass in central Kentucky since the first week of May.

TARNISHED PLANT BUG (Lygus pratensis oblineatus Say)

Kentucky. W. A. Price (May 26): The tarnished plant bug was unusually numerous on bluegrass in Bourbon County during late May.

LEAFHOPPERS (Cicadellidae)

Utah. G. F. Knowlton (May 20): At least three kinds of leafhoppers are extremely abundant and evidently damaging grass in meadows near Wales, Sanpete County.

FRUIT INSECTS

SAN JOSE SCALE (Aspidiotus perniciosus Const.)

Mississippi. M. L. Grimes (May 24): Reported as abundant on untreated trees in the Meridian area.

Missouri and Kansas. H. Baker (May 22): This insect, which has been of no importance and scarcely noted in apple orchards in the vicinity of Saint Joseph, Mo., for a number of years, appears to be increasing in abundance. No heavy infestations have been observed but light ones have been noted in a number of orchards in northeastern Kansas and northwestern Missouri.

WHITE PEACH SCALE (Aulacaspis pentagona Targ.)

Connecticut. E. P. Felt (May 23): In usually small numbers at Stamford.

New Jersey. E. P. Felt (May 23): Reported from Freehold, Monmouth County.

South Carolina. J. A. Berly (May 15): Rather abundant on portion of iris rhizomes above ground, close to a heavily infested kudzu vine, at Anderson, Anderson County, in the northwestern part of the State.

A SCALE (Lecanium sp.)

Oregon. S. C. Jones (May 20): Most of the lecanium scales reached maturity at Salem, in the northwestern part of the State, on March 31; eggs found under scales on April 2.

WESTERN TUSSOCK MOTH (Homocampa vetusta Bdv.)

California. S. Lockwood (May 15): Present in the prune and apple orchards from Sebastopol, Sonoma County, to Watsonville, Santa Cruz County.

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica soror Lec.)

California. A. E. Michelbacher (May 22): Emerging in large numbers for the last 10 days. At Brentwood, Contra Costa County, on May 14 the average number of beetles was 25 per tree in the most heavily infested orchard examined.

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

New York. D. W. Hamilton (May 27): First adults captured in bait traps at Poughkeepsie on May 8, as compared to May 26, 1940, and a mean of May 22 for an average of the years 1936-40. Number of females captured in bait traps increased on May 15, and peak captures occurred from May 19 to 21, and on May 25. First larval entrance found in the fruit on May 26, 16 days earlier than in 1940, and 13 days ahead of

the average date for the period 1936-40.

- Pennsylvania. H. M. Steiner (May 24): First emergence of adults in Adams County, in the southern part of the State, occurred in cages on May 5. First moths captured in bait pails on May 7. Large catches in bait pails on May 19 and 20. First entrances in apple observed on May 22.
- Delaware. L. A. Stearns (May 24): Twenty-five percent of overwintered larvae had pupated by April 18; 61 percent by May 1; 87 percent by May 8; and 91 percent by May 20. First emergence of spring-brood adults occurred on April 29; peak of activity, as indicated by bait pans, occurred from May 13 to 19.
- Maryland. C. Graham (May 24): Emergence in orchards began on May 6 at Frederick; on May 7 at Hancock, in the northwestern part of the State; and on May 8 at Easton in Talbott County.
- Virginia. A. M. Woodside (May 22): Flight of moths has apparently passed its peak in Albemarle County. Larvae began entering apples about May 16. Peak of flight probably not yet reached in Augusta County, where larvae are entering fruit in small numbers. Emergence in most orchards somewhat lighter than last season.
- Georgia. W. H. Clarke (May 1): First adults caught in bait pots at Cornelia, in the northwestern part of the State, on April 28; considerable number taken from bait pots today.
- Ohio. T. H. Parks (May 23): First adults caught in bait traps in southern Ohio on May 5, many moths being in flight between May 14 and 22. Emergence in central Ohio not extensive until May 14, heavy egg-laying being in progress now. Adults began to emerge on May 19 at the western end of Lake Erie and are now appearing around Cleveland.
- Indiana. L. F. Steiner (May 1): Emergence of adults (2 males) began in a cage at Elberfeld, Warrick County, in the southwestern part of the State, on April 29, and 1 moth emerged at Vincennes on April 30 in 1 of 4 cages. One moth caught in bait trap at Vincennes on April 30. (May 15): A total of 3,481 moths caught in 268 traps in the Vincennes area from May 8 to 14, inclusive. A total of 1,175 moths emerged in 4 cages. Activity and moth abundance are now approaching major peaks in this area. (May 22): Hot, dry weather has speeded up larval hatch, and wormy apples can be found in considerable numbers in the best-treated orchards. Owing to the dryness, the apples are smaller in relation to the stage of codling moth development than has been the case in any of the last 7 years. Bait traps indicate that moth activity is now at or near its peak.
- Illinois. S. C. Chandler (May 19): First larval entrances in apples at Carbondale, Jackson County, in the southern part of the State, on May 15.

W. P. Flint (May 24): Emergence practically 80-percent complete in southern Illinois on May 22. Winter survival high, indicating a heavy first brood of larvae.

Michigan. R. Hutson (May 21): Approximately 25-percent pupation at Mason, Ingham County, on May 20.

Kentucky. W. A. Price (May 26): Emergence in apple orchards unusually heavy for the middle of May; larvae began entering fruit late in the month.

Missouri. L. Haseman (May 26): Greatest intensity of moths occurred between May 10 and 17 generally, and in central Missouri larvae in considerable numbers began entering fruit on May 20 to 22.

Missouri and Kansas. (May 17): Emergence of spring-brood moths first observed in orchards in northeastern Kansas and northwestern Missouri on May 5; first moths caught in bait traps on May 11 and 12, and first eggs found on May 16. (May 22): Peak moth catch in bait traps on May 19. First larval attack noted on May 21.

Utah. C. J. Sorenson (May 14): Apparently 100 percent of the larvae have overwintered at Pleasant Grove, Utah County. First adult caught in bait trap on May 12. A few eggs and many fresh pupal cases found today.

Nevada. G. G. Schweis (May 20): Very little mortality.

Washington. C. C. Alexander and E. J. Newcomer (May 24): Peak catch of moths occurred on May 10 at Yakima, although large numbers were caught from May 19 to 23. First egg found on April 29 but, owing to cool, windy weather prior to May 18, not many eggs had been deposited. Egg deposition heavy since then.

EASTERN TENT CATERPILLAR (*Malacosoma americana* F.)

Connecticut. M. P. Zappe (May 22): Rather scarce north and east of Bridgeport on wild cherry and fruit trees. More abundant in Fairfield County. Increasingly abundant toward the New York State line.

New York. E. P. Felt (May 23): Larvae have largely completed their growth, and in many places within 50 miles of New York City completely stripped wild cherries may be seen.

R. E. Horsey (May): Uncommon in an ornamental crab apple planting at Rochester. Reported as very numerous a few years ago. Tent with caterpillars about full grown was found on May 21.

N. Y. State Coll. Agr. News Letter (May): Unusually abundant in Rockland and Green Counties, in eastern New York, but scarce in the northwestern part of the State, in Wayne, Orleans, and Niagara Counties.

New Jersey (May 26): R. J. Kowal and R. T. Webber (May 21): Heavy defoliation noted in Somerset, Hunterdon, and Mercer Counties. Feeding practically completed now.

Pennsylvania. G. B. Slesman (May 21): One thousand pupae collected from localities near Philadelphia on apple, cherry, and other trees, in order to determine percentage of parasitization. Some fungus disease is apparently killing the larvae in great numbers.

R. J. Kowal and R. T. Webber (May 21): Heavy infestation noted in northern Bucks County.

Delaware. H. F. Dietz (May 12): Much more abundant than usual, especially on wild cherries. Most of the wild cherry trees between Wilmington and Philadelphia, Pa., very seriously defoliated.

L. A. Stearns (May 20): More abundant than observed at any time in the last 12 years on wild cherry and apple in New Castle County on May 9. Larvae now about full grown.

Maryland. E. N. Cory (April 21): Tent caterpillars numerous in Anne Arundel County; fairly common in Prince Georges and Montgomery Counties.

W. E. Bickley (May 7): Very heavy infestations in Baltimore and Carroll Counties.

Ohio. E. W. Mendenhall (May 23): Observed in a few apple orchards in Fulton and Putnam Counties, in the northwestern part of the State; light damage.

Illinois. W. F. Flint (May 24): Abundant in both southern and northern Illinois, but not present in the central part of the State.

Tennessee. G. M. Bentley (May 23): Occurring on wild cherry and apple trees in the western and central counties on May 1. Leaves badly eaten and trees highly webbed.

L. B. Scott (May 19): Unusually abundant in north-central Tennessee during April and early in May. Larvae attacked practically all shade trees and, in some instances, entered houses.

Mississippi. C. Lyle (May 24): Specimens on wild cherry received from Hind's County late in April. Observed in small numbers in Covington and Oktibbeha Counties at the same time.

Minnesota. H. Milliron (May): Scarce on wild cherry at Pine City.

FRUIT TREE LEAF ROLLER (Cacoecia argyrospila Walk.)

New York. N. Y. State Coll. Agr. News Letter (May 5): Heavy infestation in the lower Hudson Valley. A few larvae have appeared in Clinton County. Abundant in the northwestern part of the State, and in

Onondaga County this pest is a most serious problem, especially where treatments were not applied. First appearance to any extent in Seneca County was on April 25.

Illinois. W. P. Flint (May 24): Very abundant throughout western Illinois. Very serious injury caused in apple orchards throughout the west-central part of the State. Also abundant in woodlands, greater numbers actually occurring there than in orchards. Somewhat less migration by wind-borne larvae from woodland to orchard than in 1940. First pupae found in western Illinois on May 18, where pupation is now general. Very little parasitization observed to have occurred.

Missouri. L. Haseman (May 26): Intensity of infestation in eastern Missouri definitely less than a year ago, but in central Missouri it is decidedly heavier, most of the larvae being full fed and beginning to pupate on May 20. Damage very severe to both fruit and foliage. Parasites and predators very active.

Utah. G. F. Knowlton (May 20): Larvae are curling many leaf masses together at Chester, Sanpete County.

RED-BANDED LEAF ROLLER (Argyrotaenia volutinana Walk.)

New York. D. E. Greenwood (May 21): First moths on apple noticed around April 20 in the insectary at Geneva. First eggs observed on April 28; eggs still present in the field on May 21, approximately 50-percent hatched.

N. Y. State Coll. Agr. News Letter (May): Very plentiful in the western part of the State. Egg masses numerous in some orchards and have begun to hatch.

A TORTRICID (Pandemis limitata Rob.)

New York. D. E. Greenwood (May 21): Larvae overwinter in hibernacula. Pupae now present, although most of the larvae are still in the last instar in insectary at Geneva.

FOUR-BANDED LEAF ROLLER (Eulia quadrifasciana Fern.)

New York. D. E. Greenwood (May 21): Emergence of adults around April 20 in insectary at Geneva. Larvae approximately $\frac{1}{2}$ inch long.

GREEN FRUITWORM (Graptolitha antennata Walk.)

New York. N. Y. State Coll. Agr. News Letter (May): Abundant in the lower Hudson Valley. A few have appeared in Clinton, Seneca, and Oneida Counties.

PEAR BORTER (Conopia pyri Harr.)

Virginia. A. M. Woodside (May 22): Large numbers of adults being captured in codling moth bait traps in one orchard near Staunton.

A TENTIFORM LEAF MINER (Ornix geminatella Pack.)

Ohio. T. H. Parks (May 23): Observed on May 16 to have infested apple leaves in several orchards in Gallia County. Traces of them found on May 20 in Lawrence County in southern Ohio.

APHIDS (Aphidae)

Connecticut. P. Garman (May 22): Infestation of Anuraphis roseus Baker and Aphis pomi Dog. generally light to moderate. Ladybeetles numerous in many orchards.

New York. N. Y. State Coll. Agr. News Letter (May): Fruit aphids rather noticeable in eastern New York, but not injurious. Syrphid fly maggots and ladybugs plentiful. In the western part of the State the green aphid (A. pomi) is on the increase, whereas the rosy aphid (A. roseus) and the grain aphid (Rhopalosiphum prunifoliae Fitch) are scarce.

Maryland. C. Graham (May 2): Practically no rosy aphids observed in the entire State.

Virginia. A. M. Woodside (May 22): A. roseus became abundant in untreated apple orchards in Augusta County, but predators have almost cleaned up the infestations.

Kentucky. W. A. Price (May 26): Rosy aphids abundant in some apple orchards late in May; some damage caused to developing fruits.

Wisconsin. C. L. Fluke (May 23): The apple grain aphid hatched on April 14 in Door County and migrants were appearing on May 21; more numerous than usual. The green apple aphid is very scarce; hatching first noticed on April 28.

Missouri. L. Haseman (May 26): Recent check on apple foliage in central Missouri shows just a sprinkle of rosy aphid, but apparently predators and parasites have largely cleared it up.

Minnesota. A. A. Granovsky (May 19): Weather conditions favorable to aphids. A. pomi and R. prunifoliae are very abundant.

Missouri and Kansas. H. Baker (May 22): All species of apple aphids very scarce in northeastern Kansas and northwestern Missouri.

Utah. G. F. Knowlton and F. C. Harnston (May 5): Injury by woolly apple aphid (Eriosoma lanigerum Hausn.) reported as severe on apple trees in the Price area.

California. S. Lockwood (May 15): The rosy apple aphid is not nearly so prevalent as during past years in the coastal apple-producing sections of the State.

LEAFHOPPERS (Cicadellidae)

Massachusetts. A. I. Bourne (May 24): Very few white apple leafhoppers (Typhlocyba pomaria McAtee) seen in orchards.

New York. N. Y. State Coll. Agr. News Letter (May): Nymphs of T. pomaria have appeared in Seneca, Monroe, and Wayne Counties.

Pennsylvania. H. M. Steiner (May 25): First hatching of T. pomaria on apple in Adams County observed on May 1. Hatching completed by May 24 in one orchard, where observations were made. Nymphs moderately abundant in some orchards. First-brood adults observed on May 20.

Missouri. L. Haseman (May 26): Leafhoppers of various species are extremely abundant in central Missouri. One brood has just matured on the foliage of apple, and various species are coming to lights in annoying numbers.

COMSTOCK'S IDEALYBUG (Pseudococcus comstocki Kuw.)

Virginia. G. J. Macussler (May): Hibernated eggs had completed hatching, and all of the nymphs had left the egg masses by May 1 in Albemarle County. Second-instar nymphs first observed on apple on May 6, 12 days earlier than last year. By May 19 at least 80 percent of the nymphs were in the second instar. First males observed beginning to form cocoons on May 21, and first third-instar females observed on the same date, 9 days earlier than last year. On May 13 one first-instar nymph was observed on a peach tree adjacent to a severely infested block of apple at Batesville.

South Carolina. W. M. Upholt (May 20): Much more uniform hatch than in 1940 at Clemson, practically all of the overwintered eggs on apple having hatched by May 5. Apparently no more eggs have been laid.

APPLE CURCULIO (Tachypterellus quadrigibbus Say)

New York. N. Y. State Coll. Agr. News Letter (May 19): Rather heavy infestation located in Wappingers Falls, about 8 miles southeast of Poughkeepsie, eastern New York.

Missouri. W. F. Turner (May 26): First signs of injury observed on scattered apples in central Missouri. Infestation light.

APPLE FLA WEEVIL (Rhynchonotus pallicornis Say)

New York. N. Y. State Coll. Agr. News Letter (May 19): Feeding observed for about 2 weeks at South Onondaga, Onondaga County, western New York; found in some blocks in large numbers.

Indiana. L. F. Steiner (May 1): Considerable injury caused to occasional trees at Elberfeld, in the Vincennes area.

ROSE LEAF BEETLE (Nodonta puncticollis Say)

Pennsylvania. H. M. Steiner (May 24): First adults observed feeding on cinquefoil at Gettysburg on May 18. Approximately 10 percent of the apples in one orchard now destroyed.

IMBRICATED SNOUT BEETLE (Epicaerus imbricatus Say)

Maryland. E. H. Siegler (April 25): Weevils found feeding on foliage and buds of apple grafts in nursery at Beltsville.

APPLE MAGGOT. (Rhagoletis pomonella Walsh)

Minnesota. A. G. Ruggles and assistants (May 14): Heavy infestation anticipated in Hennepin County.

APPLE LEAF-CURLING MIDGE (Dasyneura mali Kieff.)

New York. F. G. Mindinger (May 6): First adult seen on apple foliage at Rochester on May 6, when some blossoms were beginning to open. No leaf injury seen.

EUROPEAN RED MITE (Paratetranychus vilosus C. & F.)

Massachusetts. A. I. Bourne (May 24): Hatch from overwintered eggs began about April 25, which is unusually early.

Connecticut. F. Garman (May 22): First-generation adults have appeared in many orchards, and an early outbreak threatens.

New York. N. Y. State Coll. Agr. News Letter (May): Abundant in some orchards in Greene and Clinton Counties, in the eastern part of the State, and in Onondaga County, in the western part of the State; rather scarce elsewhere.

Pennsylvania. H. M. Steiner (May 24): Hatch of overwintered eggs complete on April 29 in Adams County. First adults observed on May 1, first eggs on foliage on May 3, and hatching of eggs on foliage on May 16. Second-brood adults appeared on May 24. Heavy infestations on deciduous fruits anticipated at an early date.

Michigan. R. Hutson (May 21): Quite noticeable in untreated orchards at Albion, Galesburg, East Lansing, Benton Harbor, and Shelby.

PEAR LEAF BLISTER MITE (Eriophyes pyri Pest.)

Utah. G. F. Knowlton (May 20): Foliage of a few old apple trees heavily attacked near Wales.

A MITE (Acarina)

Virginia. A. M. Woodside (May 22): Heavy infestation in an untreated apple orchard near Fishersville, Augusta County.

PEACH

PLUM CURCULIO (Conotrachelus nemophar Hbst.)

Massachusetts. A. I. Bourne (May 24): The very hot weather during the last week has brought plum curculio into the orchards, starting considerable activity. Records of jarring trees indicated that, beginning about May 21, more weevils were present in the orchards than all the previous collections combined.

Connecticut. P. Gannan (May 22): Just appearing in most apple orchards in New Haven County. Damage light.

New York. N. Y. State Coll. Agr. News Letter (May): Not very active in the lower Hudson Valley during the first part of May; more abundant now, and damage to apples noticeable in Dutchess County, eastern New York. Adults are feeding and laying eggs on sweet cherries in Ulster County; in Orange County first observed on sweet cherries on May 5 and on pears and apples on May 8.

Pennsylvania. H. M. Steiner (May 26): Eggs observed in small peach fruits on May 5 in Adams County. Dropping of fruits began on May 18 and was well under way by May 24. First larva matured from injured fruits on May 25.

Delaware. L. A. Stearns (May 24): First overwintered adults collected by jarring peach trees at Bridgeville, Sussex County, on April 21; peak of abundance on May 9.

Virginia. A. M. Woodside (May 22): Large numbers of adults have entered peach orchards in Albemarle County. Oviposition did not begin much earlier than last year. No larvae observed leaving fruit, and many very small larvae still present. Some larvae in dropped fruits have been killed by the heat.

Illinois. S. C. Chandler (May 19): Jarring of peach trees at Carbondale shows that infestation is considerably lighter than in 1939; the last crop year.

Georgia. O. I. Snapp (May 21): First full-grown larvae at Fort Valley, central Georgia, left peach drops on May 1, 9 days earlier than last year, and the peak of emergence of larvae from drops occurred on May 10, 11 days earlier than last year. Crop is later than that of last year and the curculio is developing more rapidly than the crop. Therefore, mid-season varieties will probably be subject to a second-brood attack, although they usually escape it. A total of 2,257 larvae were reared from 3/4 bushel of peach drops collected on May 6 in one of the most heavily infested orchards in this locality, repre-

senting an infestation of about 38 percent, as compared with 21 percent last year. Infestation in the Georgia Peach Belt is now heavier than that of 1940, as was anticipated, owing to the single brood in 1940. First pupation of the season at Fort Valley was recorded in the field on May 15.

T. L. Bissell (May 15): Infestation light in treated peach orchards. At Clarkston, DeKalb County, 15 trees jarred on May 13 and 6 trees at Experiment, central Georgia, on May 14 without finding a single curculio. Crop unusually heavy. Drops being picked up at Odessdale, Mariuether County, owing to presence of larvae.

Mississippi. C. Lyle and assistants (May 24): Reported that 65 percent of the fruits of wild plums and untreated peaches are injured in the northwestern counties. Damage observed in Chickasaw, Grenada, Holmes, Monroe, Prentiss, and Tallahatchie Counties, in the northern part of the State.

Missouri. L. Hasenau (May 26): Despite a threat of serious infestation a month ago, there is comparatively little evidence now of damage to stone fruits in central Missouri.

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Connecticut. P. Garman (May 22): Eggs seen in the field in New Haven County on peach, about 3 weeks earlier than normal.

New York. N. Y. State Coll. Agr. News Letter (May 19): First observed during the week on infested peach twigs in Rockland County, eastern New York.

Delaware. L. A. Stearns (May 24): First twig injury on peach by the first brood noted on May 8; injury general by May 21.

Maryland. C. Graham (May 2): First observed entering peach twigs today at Hancock.

Virginia. A. H. Woodside (May): Flight of spring-brood moths over in Albemarle and Augusta Counties. Some larvae almost full grown. Many more first-brood larvae than normal found in the fruits of peach, probably owing to the hot, dry weather, which has checked the growth of twigs.

Georgia. T. L. Bissell (May 15): Peach shoots infested at Griffin and Woolsey, the first ones being found on April 27.

Mississippi. C. Lyle (May 24): Injured peach twigs received from Greene, Jones, Lafayette, and Yalobusha Counties. Damage to peach twigs reported from Chickasaw, Grenada, Holmes, Montgomery, Monroe, and Tallahatchie Counties.

Indiana. L. F. Steiner (May 1): Adults have been coming to codling moth traps in the Vincennes area since the first of the week ended May 1. Apparently about as abundant as usual in apple orchards in this area.

PEACH BORER (Conopia exitiosa Say)

Georgia. O. I. Snapp (May 15): A few larvae are now more than three-fourths grown on peach at Fort Valley, central Georgia. Infestation heavy where treatments were omitted last fall.

Mississippi. C. Lyle and assistants (May 24): Heavy infestation reported in an orchard in Chickasaw County; also reported from Durant.

PEACH TWIG BORER (Anarsia lineatella Zell.)

Utah. G. E. Knowlton (May 13): Larvae are damaging young peach trees at Farmington.

C. J. Sorenson (May 21): All of the overwintered brood is now in the pupal stage at Brigham and Orem, having entered it within the last 10 days. An occasional adult has been observed. In the pupal stage at Toquerville and Hurricane; uncertain whether this is the overwintered brood or the first brood. Feeding injuries are old, apparently made by the overwintered brood. Damage heavy in young untreated orchards in all districts surveyed.

APRICOT

WESTERN PEACH BORER (Conopia opalescens Hy. Edw.)

California. A. E. Michelbacher (May 22): On May 20 at Hollister, San Benito County, 53 apricot trees; in some check plots were examined for these borers. Numbers ranged from 0 to 15, averaging 4.2 per tree. Most of the borers were still in the larval stage, although some had made cocoons.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

New York. N. Y. State Coll. Agr. News Letter (May): "Hardshells" appeared on May 12 in Orange County, whereas in Ulster County the first hard-shell stages were found on May 7. Abundant in Monroe County, and found hatching in considerable numbers in Niagara County.

Washington. J. E. Cooper (May 5): Specimens taken from property near Spokane. (Det. by P. W. Oman.)

CHERRY

CHERRY FRUITFLIES (Rhagoletis spp.)

New York. D. W. Hamilton (May 27): First adult of the black cherry fruitfly (R. fausta O. S.) taken in an emergence cage at Germantown,

Orange County, on May 26.

Oregon. S. C. Jones (May 20): Emergence of the cherry fruitfly (R. cingulata Loew) began on May 19 in Marion County, in the Willamette Valley. The black-bodied fruitfly (R. fausta) began emerging from wild cherries (Prunus emarginata) at Corvallis, Benton County, and Clatskanie, Columbia County, in northwestern Oregon, on May 15.

BLACK CHERRY APHID (Myzus cerasi F.)

New York. N. Y. State Coll. Agr. News Letter (May 19): Increasing on sweet cherries in Monroe County, western New York.

Ohio. E. W. Mendenhall (May 20): Quite abundant on leaves of sour cherries at Columbus, but no serious damage reported. (May 23): Although numerous on leaves of sweet cherries at Franklin, central Ohio, damage appears to be light.

CHERRY LEAF MINER (Profenusa canadensis Marlatt)

New York. D. W. Hamilton (May 27): Adults emerged from the soil under cherry trees from April 28 to May 4 near Hudson. Leaf injury was prevalent; most of the larvae had left the leaves by May 26.

PLUM

APHIDS (Aphididae)

Minnesota. A. A. Granovsky (May 19): Hyalopterus arundinis F. is very abundant.

Utah. G. F. Knowlton (May 22): Mealy plum aphids (H. arundinis) and long-beaked plum-thistle aphids (Anuraphis cardui L.) were seriously curling plum foliage at Perry and Brigham, Box Elder County, northern Utah, on May 16. The mealy plum aphid was damaging terminal and sometimes all foliage on some limbs of small plum trees on May 17 at Willard and Perry. On May 22 H. arundinis and A. cardui were damaging plum foliage at Morgan, Morgan County, in northern Utah where A. cardui and Phorodon humuli Schr. were damaging foliage of ornamental flowering plum.

California. S. Lockwood (May 15): H. arundinis is not nearly so prevalent on apple as during past years in Napa, Santa Clara, and Solano Counties.

RASPBERRY

RASPBERRY FRUITWORM (Byturus unicolor Say)

New York. N. Y. State Coll. Agr. News Letter (May 5): American raspberry beetles found in Ulster County during the early part of the week; some damage to foliage and buds. However, none have been observed in Dutchess County.

ROSE CURCULIO (Rhynchites bicolor F.)

California. G. S. Kido (May 24): Adults found feeding on raspberry on May 17 in Santa Clara.

CURRENT

IMPORTED CURRENT WORM (Pteronidea ribesii Scop.)

New York. N. Y. State Coll. Agr. News Letter (May 12): Larvae are beginning to defoliate parts of plants in some currant plantings in Ulster County.

Minnesota. A. A. Granovsky (May 19): Very common in the southern half of the State.

Nebraska. D. B. Whelan (May 17): Eggs on gooseberry hatching in Lancaster County on May 1.

APHIDS (Aphidae)

Minnesota. A. A. Granovsky (May 19): The currant aphid (Capitophorus ribis L.) is very common in the southern half of Minnesota.

Utah. G. F. Knowlton (May 22): Aphis varians Patch is beginning to attack terminal leaves and tips of black currant at Morgan; on May 21, A. varians and Amphorophora ribiella Davis were infesting apical growth of black currant bushes at Brigham.

GOOSEBERRY FRUITWORM (Zophodia convolutella Hbn.)

New York. N. Y. State Coll. Agr. News Letter (May): Larvae first found entering gooseberries in Ulster County on May 7; in Orange County webbing was first found on currants in an early planting on May 14.

BLUEBERRY

BLACKBERRY LEAF MINER (Metallus rubi Forbes)

Michigan. R. Hutson (May 21): Very active on blueberries about Benton Harbor and Riverside, Berrien County.

GRAPE

GRAPE LEAFHOPPER (Erythroneura comae Say)

New York. N. Y. State Coll. Agr. News Letter (May 5): Adults present in vineyards in Ulster County.

Georgia. T. L. Bissell (May 15): Injury found on May 8 on older leaves of muscadine vines at Experiment, central Georgia.

Mississippi. D. W. Grimes (May 24): Nymphs of Erythroneura sp. observed on grapes in Humphreys County.

Utah. G. F. Knowlton (May): Some adults of E. comes ziczac Walsh are being found on grape at Farmington, Davis County

GRAPE PLUME MOTH (Pterophorus periscelidactylus Fitch)

New York. N. Y. State Coll. Agr. News Letter (May 5): Larvae found feeding in one vineyard in Ulster County on May 2.

Ohio. T. H. Parks (May 23): Serious damage by larvae has occurred to terminal leaves of grape in a small vineyard in the city of Columbus.

GRAPE LEAF FOLDER (Desmia funeralis Hbn.)

Ohio. E. W. Mendenhall (May 23): Quite abundant on grapevines in Columbus and vicinity. Some severe damage reported.

GRAPE FLEA BEETLE (Altica chalybea Ill.)

Alabama. F. T. Guyton (May 1): More numerous than ever before on grapes at Auburn. Light damage has occurred.

Georgia. T. L. Bissell (May 15): Vines at Experiment lightly infested on May 8; feeding going on for several days. On May 13 two vines, one cultivated and one wild, were found infested with larvae at Clarkston, DeKalb County. Found on muscadines at Hapeville, Fulton County, today.

PECAN

APHIDS (Aphididae)

Georgia. T. L. Bissell (May 15): Monellia costalis F. abundant on pecan at Milner, producing much honeydew. M. nigropunctata Granovsky and Melanocallis caryaefoliae Davis present in small numbers, the latter having caused a small number of leaf spots.

P. M. Gilmer (May 3): Considerable numbers of black pecan aphids noted in Tift, Lowndes, and Echols Counties.

Alabama. J. M. Robinson (May 23): Yellow pecan aphid found on pecans at Auburn.

Mississippi. C. Lyle (May 24): Specimens of the giant hickory aphid (Longistigna caryae Harr.) received from Harrison and Monroe Counties, where they were on pecan and oak trees.

Texas. C. B. Nickels (May 21): Giant hickory aphid abundant on pecan at Brownwood, Brown County, late in April and early in May.

R. K. Fletcher (May 22): Heavy infestation of Myzocallis fumipennellus Fitch on April 24 at Denton.

PECAN LEAF CASEBEARER (Acrobasis juglandis Lo B.)

Texas. J. N. Roney (May 22): Considerable injury to pecan reported on April 9 in Fayette County.

Twig Pruner (Hypermallus villosus F.)

Georgia. T. L. Bissell (May 15): Branches of pecan tree cut off by borer, presumably this species, at Odessadale, Meriwether County, and Grantville, Coweta County, in the western part of the State. Wood was eaten away, leaving bark to hold limb. This is a rather common injury.

PERSIMMON

PERSIMMON PSYLLA (Trioza ciospyri Ashm.)

Mississippi. C. Lyle and assistants (May 24): Injured persimmon leaves sent from Harrison County on May 5.

A WEEVIL (Curculionidae)

Missouri. L. Haseman (May 26): The gray persimmon curculio is attracting some attention in central Missouri. In some years it is found to be extremely abundant on persimmon.

CITRUS

GREEN CITRUS APHID (Aphis spiraccola Patch)

Florida. J. R. Watson (May 22): Heavy infestations died down as the dry weather checked any growth on citrus.

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Florida. J. R. Watson (May 22): D. citri and the cloudy-winged whitefly (D. citrifolii Morg.) were on the wing during the latter part of April.

Alabama. J. M. Robinson (May 23): Adult whiteflies (Dialeurodes sp.) abundant at Auburn, Lee County, on Japanese privet.

Mississippi. C. Lyle (May 24): Light infestation noted in the Meridian area.

Texas. R. K. Fletcher (May 22): Observed on orange on May 19 in Harris County, in the eastern part of the State.

CITRICOLA SCALE (Coccus pseudomagnoliarum Kuw.)

California. R. S. Woglum (May): Hatching has begun. More groves have a scale problem this year than for a long time, owing to several seasons favorable for scale increase.

A RED SPIDER (Anychus clarki McG.)

Texas. W. V. Ausmus (May 3): Heavy infestation of the citrus red spider on the leaves of young citrus at Carrizo Springs, Dimmitt County, has been general over the winter-garden district since late in winter.

CITRUS RUST MITE (Phyllocoptes oleivorus Ashm.)

Florida. J. R. Watson (May 22): The unusually dry weather during the latter part of April and in May has caused an increase in numbers on citrus.

Texas. C. O. Gingress (May 5): Prevalent on the new crop of citrus in Hidalgo. Control throughout southern Texas delayed, owing to heavy rainfall.

California. R. S. Woglum (May): Silver mite again observed in groves in southern San Diego County, lemons being the most severely attacked.

OLIVE

OLIVE SCALE (Parlatoria oleae Colv.)

California. D. L. Van Dine (May 19): Eggs destroyed by the mite, Hemiseiotes malus Shin., a common predator on scale insects. (Det. by H. E. Ewing.)

PAPAYA

PAPAYA FRUITFLY (Toxotrypana curvicauda Gerst.)

Florida. M. R. Osburn (May 17): First infestation in the vicinity of Fort Pierce, on the lower east coast, since the cold weather of January 1940 was found on April 23.

TRUCK - CROP INSECTS

VEGETABLE WEEVIL (Listroderes obliquus Klug)

Mississippi. C. Lyle (May 24): Adults reported from Attala, Grenada, Leake, Madison, Scott, Kemper, Oktibbeha, Franklin, and Lincoln Counties. Plants injured were tomatoes, cabbage, turnips, cotton, and dahlias.

Texas. W. V. Ausmus (April 22): Found destroying tomato and spinach plantings in gardens in Uvalde city limits. First record of occurrence in vicinity of Uvalde.

R. K. Fletcher (May 22): Causing severe injury on April 26 in Harris County. Tomato plants at the experiment station in Brazos County, in the eastern part of the State, were severely damaged late in April and early in May.

STRIPED CUCUMBER BEETLE (Diabrotica vittata F.)

Indiana. J. J. Davis (May 27): Generally less abundant than usual. Weather conditions may be responsible.

Florida. J. R. Watson (May 22): Reported as injuring gourds at Gainesville and cucumbers at Panama City, in the northern part of the State.

Mississippi. C. Lyle (May 24): Abundant in the northwestern section and the Meridian area.

SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata F.)

Pennsylvania. B. F. Coon (May 17): First appearance occurred on May 14 on beans at Lancaster, in the southeastern part of the State. Adults not numerous.

Georgia. T. L. Bissell (May 15): First infested corn was observed on May 1. A few full-grown larvae were found on May 2, and a newly formed beetle was found on a rose on May 12.

Mississippi. C. Lyle and assistants (May 24): Specimens from Lawrence County were causing damage to corn, the damage estimated as high as 80 percent in some 10- and 15-acre fields in Pearl River County. Also observed injuring corn in Pike County, in the southern part of the State, and abundant in the northwestern counties, the Meridian area, and Oktibbeha County, where beans were being injured.

Kansas. H. R. Bryson (May 27): The spotted cucumber beetles are more abundant than usual. In the vicinity of Manhattan they have been observed causing injury to the foliage of newly planted tomatoes and to beans. They are also abundant in alfalfa fields.

Utah. G. F. Knowlton and F. C. Harmston (April 25): Causing severe injury to cucumbers and corn near Saint George and Hurricane, in the southwestern part of the State. (May 8): Damage so severe on seedling watermelons at Moab, in the eastern part of the State, that several acres were destroyed.

FLEA BEETLES (Halticinae)

New York. N. Y. State Coll. Agr. News Letter (May): Flea beetle injury to cabbage seedlings in plant beds in the eastern part of the State is moderate, although they occur in small numbers. In western New York, early set cabbage in Cayuga and Orleans Counties showed serious damage.

Mississippi. C. Lyle and assistants (May 24): Flea beetles, probably Epitrix fuscata Crotch, were reported as attacking eggplant in parts of Copiah and Lincoln Counties and in Calhoun and Grenada Counties. Phyllotreta vittata discedens Weise was taken on turnips in Attala County and reported as injuring turnips in Calhoun and Grenada Counties.

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Flea beetles are a serious pest in the Spearfish Valley of the Black Hills.

Utah. G. F. Knowlton and F. C. Harmston (April and May): Reported as damaging tomatoes, radishes, and other garden crops at Saint George and Santa Clara, in Washington County, on April 25. During May, flea beetles injured watermelon and cantaloup at Bluff, San Juan County, and caused some injury to recently set tomato plants in Davis and Weber Counties, and to cabbage plants at Morgan, Morgan County.

Washington. R. S. Lehman (May 19): E. subcrinita Lec. damaged seeded tomatoes at Walla Walla.

SEED-CORN MAGGOT (Hylemya cilicrura Rond.)

New York. N. Y. State Coll. Agr. News Letter (May): Infesting squash plants on Long Island, and early plantings of beans in Columbia and Onondaga Counties.

South Carolina. W. M. Upholt (April 25): Adults very plentiful in barley field at Bennettsville, in the northeastern part of the State. (Det. by D. G. Hall.)

Louisiana. C. E. Smith (April): Adults collected on snap beans and lima beans at Baton Rouge. Larvae were collected on April 14 in sprouting beans. Adults emerged on April 25. (Det. by D. G. Hall as Hylemya sp.)

Iowa. H. E. Jaques (May): Light infestation in Cedar and Keokuk Counties, in the southeastern section of the State.

Utah. G. F. Knowlton, et al. (May 9): Damaged peas, corn, and beans in numerous gardens at Hanksville and Caineville, Wayne County, south-central Utah.

POTATO APHID (Macrosiphum solanifolii Ashm.)

Virginia. H. G. Walker and L. D. Anderson (May 28): Began building up on tomatoes and potatoes on the Eastern Shore during April, but have not become serious.

FALSE CHINCH BUG (Nysius ericae Schill.)

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Present in alarming numbers in western fringe of counties.

Utah. G. F. Knowlton and F. C. Harmston (May 7): Injured watermelon and cantaloup patches at Bluff, in San Juan County.

A COREID (Corizus viridicatus Uhl.)

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Gardens in the Spearfish Valley are being damaged.

GARDEN CENTIPEDE (Scutigera immaculata Newp.)

Utah. G. F. Knowlton (May 1): Seriously damaging young germinating plants in a garden at Providence, Cache County. Three plantings of beans were destroyed on this land last season.

Oregon. H. E. Morrison (May 20): Severe infestations on squash and spinach in Eugene and Corvallis, in the western part of the State.

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

New York. N. Y. State Coll. Agr. News Letter (May): Present on Long Island.

Pennsylvania. B. F. Conn (May 22): Adults and eggs readily found on potato plants at Lancaster, but injury is not apparent.

Virginia. L. A. Hetrick (May 5): Adults and egg masses are abundant on potatoes at West Point. No larvae noted.

H. G. Walker and L. D. Anderson (May 28): Very abundant in a number of potato fields near Norfolk.

North Carolina. Z. P. Metcalf (May 22): Causing more serious damage than writer has seen for the last several years in the eastern early potato section.

Georgia. W. H. Clarke (April 30): First adult found in a field of potatoes at Cornelia, in the northern part of the State, today.

P. M. Gilmer (May 17): Caused considerable damage to commercial potato crops in Tift County, in the southern part of the State, and large numbers of young larvae are present in untreated fields.

Florida. J. R. Watson (May 22): Severely injuring tomatoes in Lake County and eggplant in the Gainesville section and in Columbia County, in the northern part of the State.

Tennessee. G. M. Bentley (May 12): Infestation on potatoes in Weakley County, in the northwestern part of the State, is 10 percent.

Mississippi. C. Lyle (May 24): Generally abundant over the State.

Ohio. R. H. Nelson (May): Adults present in injurious numbers on recently transplanted tomato plants during the first 2 weeks of May at South Point. Newly hatched larvae were noted on potatoes in the same locality on about May 15.

Iowa. H. E. Jaques (May): Light to moderate infestation in several southern counties, and light to moderate in Boone, Tama, Crawford, and Pocahontas Counties, in the central section, and moderate in Chickasaw County, in the northeastern part of the State.

Missouri. L. Haseman (May 26): Very abundant in central Missouri. The earliest larvae are now half grown or larger.

Nebraska. H. D. Tate (May 5): Beetles, which appeared to have recently emerged from hibernation, were observed in Lancaster County today, the first authentic activity record for this year.

Kansas. H. R. Bryson (May 26): Adults unusually abundant this spring and have caused considerable injury to potatoes and tomatoes. Some tomato plants in coldframes have been injured so that control measures were necessary. Injury caused by the adults was followed by larval injury. Control measures have been necessary to save the potatoes.

Texas. J. N. Roney (May 22): Feeding on potatoes at College Station, in Brazos County.

POTATO FLEA BEETLE (Epitrix cucumeris Harr.)

Connecticut. N. Turner (May 23): Adults appeared on potatoes about the middle of May.

New York. N. Y. State Coll. Agr. News Letter (May): Actively feeding on tomatoes in Columbia County, and tomatoes and potatoes on Long Island.

Pennsylvania. B. F. Coon (May 19): Very numerous on young potatoes at Lancaster and causing extensive foliage injury. (May 21): Injuring tobacco seedbeds at Lancaster.

Virginia. H. G. Walker and L. D. Anderson (May 28): Very abundant in Accomac County during early part of May.

North Carolina. Z. P. Metcalf (May 22): Not especially serious in eastern part of State.

Indiana. J. J. Davis (May 27): Abundant on tomato.

Mississippi. M. L. Grimes (May 24): Black flea beetles, probably this species, are damaging tomatoes in Neshoba County.

Nebraska. R. E. Hill (May 7): A few specimens were collected today on potato in Lancaster County.

CORN EAR WORM (Heliiothis armigera Hbn.)

Virginia. H. G. Walker and L. D. Anderson (May 23): Several moths have been observed in cornfields during the last few days in Princess Anne County.

South Carolina. O. L. Cartwright (May 15): Moths flying at Clemson, in the northwestern part of the State. Eggs found on tomato plants.

W. M. Upholt (May 16): Eggs fairly abundant on leaves of tomatoes in Barnwell County, in the western part of the State. Few first-instar larvae beginning to feed in planting at Edisto Experiment Station.

Mississippi. N. L. Douglass (May 24): Damage to small tomato fruits observed in Carroll County.

Texas. C. O. Gingrass (May 5): Damage severe in many tomato fields in Hidalgo County.

E. F. Pepper (May 21): Tomatoes at Weslaco, Hidalgo County, damaged 5 percent.

POTATO LEAFHOPPER (Empoasca fabae Harr.)

North Carolina. Z. P. Metcalf (May 22): Very serious on some plants in the eastern part of the State.

Iowa. H. E. Jaques (May): Light infestation in Tama County, in the central part of the State, and moderate infestation in Audubon and Mills Counties, in the southwestern section.

POTATO PSYLLID (Paratrioza cockerelli Sulc)

Nebraska. R. E. Hill (May 13): A few specimens were collected on potato in Lancaster County today.

EGGPLANT TORTOISE BEETLE (Gratiana pallidula Boh.)

Louisiana. K. L. Cockerham (May 2): Specimens submitted with report that they were numerous and feeding on potatoes at Sunset, Saint Landry Parish. (Det. by H. S. Barber.)

A PLANT BUG (Horcias dislocatus Say)

Indiana. J. J. Davis (May 27): Reported as attacking potatoes at Westfield, near the center of the State. (Specimens submitted.)

BEANS

MEXICAN BEAN BEETLE (Epilachna varivestis Muls.)

Ohio. R. E. Nelson and N. F. Howard (May): First overwintered adult found on beans at South Point on May 14. Still very scarce. First adults on beans in field at Columbus noted on May 22.

Georgia. P. M. Gilmer (May 3): Appeared much earlier than usual in Tift County. Considerable damage by adults has occurred on plantings of snap beans. This is the second year of early appearance.

T. L. Bissell (May 15): First beetle seen on May 3. Little injury to date.

Mississippi. C. Lyle (May 24): Very light infestations reported in the Meridian area and in Scott and Yalobusha Counties.

BEAN LEAF BEETLE (Cerotoma trifurcata Forst.)

Ohio. R. H. Nelson (May): Common on young beans at South Point early in May. Feeding evident but not serious in many fields.

Indiana. J. J. Davis (May 27): Reported as damaging string and lima beans at Ambia in the western part of the State on May 22.

Illinois. A. F. Satterthwait (April 29): Adult entered a Japanese beetle trap in Champaign today.

Georgia. W. H. Clarke (April 30): A few beetles were caught on small bean plants at Cornelia today. Damage has been light.

T. L. Bissell (May 15): Caused conspicuous damage to beans since the last of April.

Tennessee. L. B. Scott (May 19): Reported on beans from several sections of north-central Tennessee. Normally abundant.

Mississippi. C. Lyle and assistant (May 24): General injury to beans reported. Observed on cowpeas and beans at State College.

PEAS

PEA APHID (Macrosiphum pisi Kltb.)

New York. N. Y. State Coll. Agr. News Letter (May 12): An average of 1 winged adult evident per 15 pea plants, about 6 inches high, on Long Island.

Maryland. C. Graham (April 27): Survey of Eastern Shore showed winged female aphids present in all peafields examined. Many young present in some places.

Virginia. A. M. Woodside (May 7): Fifteen-acre field of red and alsike clover near Staunton, in Augusta County, heavily infested, and 5 acres practically killed. Alsike clover apparently more severely damaged than the red.

H. G. Walker and L. D. Anderson (May 28): Heavy infestation developed in some alfalfa, clover, and vetch fields during the early part of May in the Norfolk area and on the Eastern Shore. Large area in one crimson-clover field was killed. Peas escaped with little injury, owing to late appearance of aphids.

Mississippi. C. Lyle and assistants (May 24): English peas injured in Monroe County. Heavy infestations reported on English peas in the Meridian area, in Grenada County, and on sweet peas in the southeastern counties.

Indiana. J. J. Davis (May 27): Reported as abundant on alfalfa in southern part of State early in month. Very abundant at La Fayette on alfalfa, causing noticeable damage.

Wisconsin. J. E. Dudley, Jr. (April 30): Extremely heavy infestation for this time of year. One or more aphids collected in every sweep, and around Madison the infestation ranges from 1 to over 100 per sweep. Most of them are apterous adults. During a survey east, north, and west of Madison, 1 aphid was obtained in every single sweep. Usually there were from two or three dozen, up to 100, and in one sweep 263. Average infestation of from 2 to 10 aphids per square yard in alfalfa, which is damaged severely where there is a heavy concentration.

(May 22): In Dane County, in the southern part of the State, a heavy dispersion of winged forms from alfalfa has been taking place for a week. Alaska peas 10 inches high have infestation of 10 to 15 aphids per net sweep. Late or sweet peas 1 or 2 inches high have considerable infestation, and winged aphids can be found on peas just through the ground.

Missouri and Arkansas. J. E. Dudley, Jr. (April 30): On April 27 Professor Wilson, of Madison, Wis., observed that from Saint Louis north to Madison every alfalfa field inspected was infested. From Hot Springs, Ark., up into Missouri the aphids had already left their winter hosts.

Oklahoma. J. M. Maxwell (April 21): Damaging alfalfa fields throughout the State, the damage in central part being quite severe.

Arizona. T. P. Cassidy (April 22): Collected from alfalfa at Marana, in the southern part of the State. (Det. by P. W. Mason.)

Utah. G. F. Knowlton and F. C. Harnston (April): Winged aphid populations range from extremely scarce on peas to moderately high in Washington, Weber, and Salt Lake Counties, and are present on alfalfa at Jensen and in Pleasant Valley in the Uinta Basin. (May): Invading peafields in northern part of State, and nymphs are being deposited. Causing moderate damage to alfalfa at Bluff, Moab, Elgin, and Mapleton.

Nevada. G. G. Schweis (May 20): Not numerous enough in any of the western counties to cause any serious damage. Population is remarkably low.

California. S. Lockwood (May 15): Pea aphid has severely infested approximately 1,000 acres of spring-harvested peas in the Sacramento River Delta area.

PEA WEEVIL (Bruchus pisorum L.)

Utah. G. F. Knowlton (May): Pea weevils were emerging from hibernation on May 10. On May 13 they were abundant under loose bark of large box-elder trees at Kaysville, and on May 14 an occasional adult was found in peafields not yet in blossom at American Fork, North Logan, and Hyde Park. Some were still in hibernation under loose poplar bark on dead trees at Taylorsville. At Perry 3 adults were found in 100 sweeps on May 16 on early canning peas. Winter mortality was generally low in areas examined, being the highest in Cache Valley.

CABBAGE

IMPORTED CABBAGE WORM (Pieris rapae L.)

New York. N. Y. State Coll. Agr. News Letter (May): Butterflies present in unusually large numbers for this season of year. Apparently there has been a very high winter survival or a migration of butterflies. Eggs were being laid in Cayuga County on early set cabbage on April 29.

Mississippi. C. Lyle and assistants (May 24): Reported as present on untreated cabbage plants in the northeastern part of the State and in the Durant area.

Iowa. H. E. Jaques (May): Light infestation in Davis County, in the southern part of the State, and in Pocahontas County, in the northwestern section.

Missouri. L. Haseman (May 26): Butterflies have been on increase since middle of May. Larvae from half to two-thirds grown are damaging untreated cabbage plants.

Utah. G. F. Knowlton (May 9): Butterflies are active at Springville, Farmington, Provo, Pleasant Grove, and Salt Lake City. (May 20): Abundant near Chester and Manti.

DIAMONDBACK MOTH (Plutella maculipennis Curt.)

Utah. G. F. Knowlton (May 3): Larvae are heavily attacking blossoms and leaves of the serious weed, whitetop, near Ogden.

CABBAGE SHOOT WEEVIL (Ceutorhynchus assimilis Payk.)

Washington. L. G. Smith (May 10): Present on wild turnip blossoms on all farms observed on San Juan Island on April 23. Numerous in blossoms in cabbage seed plantings in Skagit County, in the northwestern part of the State, on April 21.

CABBAGE MAGGOT (Hydrotaea brassicae Bouche)

New York. N. Y. State Coll. Agr. News Letter (May): Egg laying passed its peak on Long Island by the middle of the month. Infestation is much heavier than usual, with severe injury to red radishes. Flies are present in Delaware County in the Arkville and Long Eddy sections, and they are also numerous in several counties in the western part of the State.

Pennsylvania. H. N. Worthley (May 2): Eggs laid between April 29 and May 2 at State College, about 10 days after first setting of early cabbage. (May 21): Flies still laying eggs on early set cabbage at State College. Maggots found on May 16 in stems of untreated plants.

Illinois. W. P. Flint (May 24): Very abundant and destructive in northern Illinois.

Washington. L. G. Smith (April 30): Three out of about 20 infested home gardens on Naches Heights, Yakima, reported 50 percent infestation of maggots in radishes harvested.

APHIDS (Aphididae)

Pennsylvania. H. N. Worthley (May 21): Colonies now forming on early cabbage at State College, but not numerous enough to cause injury.

Virginia. H. G. Walker and L. D. Anderson (May 28): Many fields of seed kale ruined because of abundance of cabbage aphids. Also very abundant in many cabbage fields in the Norfolk area and on the Eastern Shore.

Ohio. R. H. Nelson (May): Light to very heavy infestations developed on plantings at South Point during May.

Washington. L. G. Smith (April 21): Infestations just starting on tips of cabbage seed plants in Skagit County. A few stalks were in bloom. Writer observed some completely infested plants on one farm, and colonies of aphids which were just getting started on the tips at another farm in the vicinity.

ONION THRIPS (Thrips tabaci Lind.)

Florida. J. R. Watson (May 22): Very severe in a field of cabbage in the Sanford section, in Seminole County.

ASPARAGUS

ASPARAGUS BEETLES (Crioceris spp.)

New York. N. Y. State Coll. Agr. News Letter (May): Crioceris asparagi L. was active in Oneida, Onondaga, and Oswego Counties. Parasites found at Fulton on May 16. Beetles depositing eggs on Long Island.

Pennsylvania. B. F. Coon (May 22): Larvae and adults of C. asparagi are feeding on asparagus at Lancaster. Population small. Six adults of C. duodecimpunctata L. were taken from an old asparagus plant at Lancaster.

H. N. Worthley (May 21): Adults of C. duodecimpunctata and C. asparagi were first seen on asparagus at State College on about May 10. Eggs of the latter were observed on May 17.

Maryland. E. N. Cory (April 24): Present on asparagus in Harford and Baltimore Counties.

Virginia. H. G. Walker and L. D. Anderson (April 30): Heavily infested a 30-acre field of asparagus near Machipongo, on the Eastern Shore.

North Carolina. C. S. Brimley (May 8): First adults of season seen on asparagus at Raleigh on May 8.

South Carolina. C. F. Rainwater (May 3): Numerous on asparagus in Calhoun County during week ended May 3 and caused considerable injury to crop.

Minnesota. A. A. Granovsky (May 19): Very numerous and destructive in many asparagus plantings near Minneapolis; one of worst outbreaks in years.

Utah. G. F. Knowlton (May 8): Population apparently was reduced in northern Weber and Davis Counties by the storms and frost, which also injured the asparagus shoots. All eggs laid at that time were destroyed. (May 10): One adult taken at Mapleton, in Utah County. (May 12): Very abundant and damaging some asparagus fields at Plain City and in several other Weber County localities; also on volunteer asparagus in river bottoms and fence rows south of Plain City. Eggs are common.

Washington. L. G. Smith (May 10): Asparagus growers at Prosser, in the southern part of the State, were reported as dusting on April 18. Adults reported as abundant on asparagus at Sunnyside on April 19, but damage not serious. Eggs found but no larvae. Eggs found on plants in Spokane Valley on April 24, the first report of asparagus beetles from Spokane County.

DILL

BLACK SWALLOWTAIL (Popilio polyxenes F.)

Missouri. L. Haseman (May 26): Heavy flight of butterflies occurred during the middle of May. Half-grown larvae are abundant and feeding on the foliage of dill in central Missouri.

ONIONS

ONION THRIPS (Thrips tabaci Lind.)

Virginia. H. G. Walker and L. D. Anderson (May 28): Becoming very abundant on several crops such as onions, cantaloups, cabbage, and celery at Norfolk.

A MIRID (Labopidea allii Knight)

Missouri. L. Haseman (May 26): This small, pale-green mirid was reported as very abundant and destructive on onions in a few gardens in central Missouri.

RHUBARB

RHUBARB CURCULIO (Lixus concavus Say)

New York. N. Y. State Coll. Agr. News Letter (May 5): Numerous complaints of damage to home gardens received.

Michigan. R. Hutson (May 21): Specimen sent in from Nashville.

SPINACH AND BEETS

SPINACH LEAF MINER (Pegomya hyoscyami Panz.)

Ohio. T. H. Parks (May 23): Serious damage has occurred to both spinach and beets in commercial truck gardens of Hamilton County, around Cincinnati. Formerly a pest near Cleveland, but has not been serious in that area for a decade.

Indiana. J. J. Davis (May 26): This species, apparently, reported damaging beets at Wabash.

CARROT

CARROT BEETLE (Ligyrus gibbosus Deg.)

Missouri. L. Haseman (May 26): Very light in central Missouri, but on May 22 a number of specimens were sent from southwestern part of State.

Nebraska. H. D. Tate (May 17): Adults collected during week of May 11 to 17 in Lincoln, Lancaster County.

Utah. G. F. Knowlton (May): Adults abundant at lights in Logan on May 15. A few were observed on May 11 at Logan, and on May 16 at Salt Lake City.

SWEETPOTATO

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis Crotch)

Tennessee. G. M. Bentley (May 16): Reported in Buena Vista section, Carroll County. In a large field of sweetpotatoes infestation was 5 percent; leaves badly eaten.

STRAWBERRY

STRAWBERRY WEEVIL (Anthonomus signatus Say)

New York. N. Y. State Coll. Agr. News Letter (May 5): Injury first seen in Ulster County on April 30, and in Dutchess County only a few signs of injury were noticed.

Tennessee. G. M. Bentley (May 21): Infestation on strawberries in Weakley County is 2 percent.

Minnesota. A. G. Ruggles (May 19): Extremely abundant in Ramsey and Hennepin Counties.

STRAWBERRY LEAF ROLLER (Ancylis comptana Froel.)

Kansas. H. R. Bryson (May 26): The strawberry leaf roller is causing considerable injury to the leaves of plants at Manhattan and in northeastern Kansas wherever control measures are not being applied.

Utah. G. F. Knowlton (May 8): Adults are in flight at Willard, Harrisville, and Riverdale.

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus L.)

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Several reports of severe injury to strawberries received from Brookings, Moody, and Minnehaha Counties, in the eastern part of the State.

SPRINGTAILS (Collembola)

Massachusetts. A. I. Bourne (May 8): Reported as injuring strawberry blossoms in a large planting near Amherst. Specimens submitted.

COMMON RED SPIDER (Tetranychus telarius L.)

Oregon. H. E. Morrison (May 20): First found on April 15 at Corvallis and increased slowly until May 19, after which there was a rapid increase. Threatened to do extensive damage to a 12-acre strawberry planting.

MILLIPEDES (Diplopoda)

Tennessee. G. M. Bentley (May 21): Reported as eating fruits of strawberries in Henderson, Chester County, sometimes as many as six in a berry, in large commercial strawberry fields.

HOPS

HOP APHID (Phorodon humuli Schr.)

Oregon. H. E. Morrison (May 20): Migration of spring migrants occurred early in May, and fairly heavy infestation has been noted all over the Willamette Valley. Seasonal history for this year is apparently 6 weeks to 2 months ahead of last year.

COMMON RED SPIDER (Tetranychus telarius L.)

Oregon. H. E. Morrison (May 17): First noted on hop foliage on May 17 at Independence and Corvallis. Earliest previous record since 1937 was June 6.

TOBACCO

TOBACCO FLEA BEETLE (Epitrix parvula F.)

Pennsylvania. B. F. Coon (May 23): First appearance today on tobacco at Lancaster.

Tennessee. L. B. Scott (May 19): Normally abundant in tobacco plant beds in north-central Tennessee. No serious damage reported.

TOBACCO BUDWORM (Holiothis virescens F.)

Florida. F. S. Chamberlin (May 7): Normal infestations in Gadsden County tobacco fields; adults of the ichneumon parasite Cardiochiles nigriceps

Vier. are more numerous than in many years.

TOBACCO THRIPS (Frankliniella fusca Hinds)

Florida. F. S. Chamberlin (May 28): Owing to the drought the tobacco thrips are increasing rapidly and damage to the shade-grown tobacco crop appears imminent in Gadsden County.

C O T T O N I N S E C T S

BOLL WEEVIL (Anthonomus grandis Boh.)

South Carolina. C. F. Rainwater (May 3): Active in cages in Florence and Calhoun Counties during week ended May 3. Emergence records were begun on May 1, a total of 347 being removed to date. In 1940 emergence records were begun on May 6, only 16 emerging during the entire month of May. In 1939 emergence records were begun on May 2, and through May 5 only 128 had emerged.

F. F. Bondy, et al. (May 24): Emergence from cages in Florence County continued rapidly during the week ended May 24; total emergence was 2,335, as compared with 13 for the same period in 1940, and 581 in 1939. Despite this fact, only 1 weevil has been found in cotton and 3 caught on 1 screen trap near the woods. Dry weather is probably delaying emergence.

Georgia. P. M. Gilmer (May 17): Observed in Tift County this week in considerable numbers in fields near favorable hibernating quarters. Considerably more numerous than for some years and readily found in chopped-out cotton. Appearance rather sudden, since none was found in the same locations last week. Some bud damage in a few fields on small cotton just out of seedling stage. (May 24): Common in some fields in Tift and Berrien Counties; not present in southern Lowndes and Echols Counties.

Florida. C. S. Rude (May 24): Heaviest population found in Alachua County in a field, where there were 40 per acre; none found in the fields examined in Lake County; in Marion County, population ranged from 10 to 20 per acre. Populations reported as very heavy west of the Suwannee River; it is claimed that 1 weevil was found to every third cotton plant in 1 field.

Mississippi. C. Lyle and assistants (May 24): Two adults found on 100 yards of row on one property on May 20, and 1 adult on 100 yards of row in another property, both in Holmes County. None found on farms examined in 6 northwestern counties on May 20.

E. W. Dunnam, et al. (May 10): One weevil found in Washington County in small cotton on May 9, the earliest date on which a weevil has been found since the establishment of this station. Considerable scouting done today in this same locality, which is next to the woods, but no more weevils found. (May 24): A total of 5 weevils found this week on 1,700 plants examined on 3 plantations in Washington County, as compared to 9 found on 150 seedling cotton plants on May 27, 1939.

Louisiana. R. C. Gaines, et al. (May 24): Observed in several fields in Madison Parish during the week ended May 24; total taken on field flight screens during the week ended May 23 was 13, as compared to 1 in 1940, and 2 in 1939.

Texas. F. L. Thomas (May 14): Weevils may be found in many cottonfields of central Texas. Also present in the lower Rio Grande Valley, but not in sufficient numbers to justify control measures. (May 21): Higher percentages of overwintered weevils have emerged in south-central and north-central Texas than during any similar period in the last 16 years. At College Station 8.13 percent has emerged, and at Waco, McLennan County, 7.57 percent has become active. Not only are percentage of survival well above the normal of 5.5 percent, but the percentage figures take on more significance when it is remembered that the numbers of weevils entering winter quarters last fall were much greater than average. (May 28): Concentration of weevils in early planted cotton, and there are 4 to 7 per 100 plants in some fields, an exceptionally high population. Emergence at College Station has now reached 11.4 percent, more than double the average.

K. P. Ewing, et al. (May 17): In McLennan County 306 weevils emerged during the week bringing the total to date to 1,358. Percentage emergence is 7.15. A total of 64 weevils was found on 5,700 cotton plants inspected in 23 fields in McLennan and Falls Counties during the week, an average of 1.12 per 100 plants. Average infestation in river-bottom fields inspected was 1.33 weevils per 100 plants, and in the prairie fields 0.74 per 100 plants.

C. R. Parencia (May 24): Three weevils found during the week in Calhoun County.

A FLEA BEETLE (Systema sp.)

Georgia. H. O. Lund (May): Young leaves reported on May 12 as punctured to such an extent that 6 acres of cotton in Clarke County had to be replanted. Neighboring cotton just as badly damaged. Severe damage to young cotton reported and observed in Clarke and Barrow Counties on May 21.

T. L. Bissell (May): Seedling cotton and newly set pepper plants severely damaged on May 12 in the western part of Spalding County. Plants damaged until they died. Also found on a weed, feeding in the same way. On May 16 cotton at Pomona was damaged.

W. H. Clarke (May 17): Specimens submitted on May 16 with injured seedling cotton and weeds from Habersham, Habersham County. Moderately heavy damage.

BEET ARMYWORM (Laphygma exigua Hbn.)

Arizona. C. D. Lebert (May 15): Serious damage caused on several hundred acres of young cotton in the Phoenix area, 90-percent infestation being found in several fields and 30-percent damage. Also abundant on ornamentals generally over this area.

T. P. Cassidy (May): Reported as appearing generally over the cotton area of the Marana district, and 5,200 acres of cotton in the Eloy area reported as infested. Stands around Casa Grande and Coolidge already injured. Apparently very bad all over the cotton areas of the State.

W. A. Stevenson (May 13): First larvae found on seedling cotton on May 12 at Marana, Pima County. Infestation still incipient. (May 17): Appeared generally over the Salt River and Santa Cruz Valleys and the Casa Grande-Coolidge-Eloy cotton areas during the last week. Very little damage as yet, but apparently, this will be the worst infestation ever experienced in Arizona, owing to the wide distribution. (May 24): Situation began to clear up during the latter part of the week ended May 24, as the larvae had about finished feeding.

BOLLWORM (Heliothis armigera Hbn.)

Georgia. O. I. Snapp (May 21): Young cotton plants, planted after vetch, in a field at Fort Valley, central Georgia, have been seriously damaged.

Texas. K. P. Ewing, et al. (May 24): Total of 43 adults emerged during the week in McLennan and Falls Counties. Total emergence is 200, or 22.2 percent.

COTTON LEAF WORM (Alabama argillacea Hbn.)

Mexico. J. Lanark, Jr. (May 12): One larva collected from cotton about 25 miles southwest of Matamoros on May 9. (Det. by C. Heinrich.)

R. W. Harned (May 29): Three larvae collected from cotton near Matamoros on May 17.

PINK BOLLWORM (Pectinophora gossypiella Saund.)

Texas. L. W. Noble (May 17): A total of 3,885 pink bollworms, or 9.83 percent, has emerged from 39,489 in hibernation cages in Presidio County. Emergence from April irrigated cages has probably passed the peak, but the April-20 irrigated cages probably have not reached the peak. Recent rains have stimulated emergence in the nonirrigated cages in Presidio County. (May 24): Emergence was 622 for the week, as compared with 984 last week. Total emergence is 11.41 percent of the original larvae, a higher percentage of emergence than ever recorded in previous years.

Mexico. R. W. Harned (May 29): First pink bollworms from 1941 cotton collected from cotton blooms about 5 miles west of Matamoros on May 17. (Det. by C. Heinrich.)

COTTON FLEA HOPPER (Psyllus scriptus Reut.)

Texas. E. L. Thomas (May 7): Low emergence or hatch in south-central Texas is remarkable. Only in the vicinity of McLennan and Henderson Counties, in north-central and northeastern Texas, respectively, has the hatch

been above average. (May 17): Indications are that emergence from overwintered eggs in McLennan County for the week ended May 17 is about complete, only 214 nymphs emerging during the week, as compared with 3,503 the preceding week. Total emergence is 61,157 from 34 cages. No adults found on 5,700 cotton plants examined in 23 fields. (May 28): Severe and widespread damage caused to early cotton in the lower Rio Grande Valley. High infestation found in early cotton at Port Lavaca.

C. R. Parencia (May 17): Average of 0.92 adult and 1.34 nymphs found per 100 terminal buds on 4,800 cotton terminal buds inspected in 17 fields in Calhoun County, as compared with an average of 3.09 adults and 1.94 nymphs during the week ended May 18, 1940. Highest infestation found in a small field of March cotton, being 2.7 adults and 13.6 nymphs per 100 buds. (May 24): Average of 1.08 adults and 8.2 nymphs found per 100 terminal buds on 4,500 cotton terminal buds inspected. Infestation in March cotton increased from 16.3 per 100 terminals last week to 79.7 this week. Cotton in this field is being seriously damaged.

APHIDS (Aphidae)

South Carolina. F. F. Bondy, et al. (May 24): Light infestations of the cotton leaf aphid (Aphis gossypii Glov.) found in Florence County.

Georgia. P. M. Gilmer (May 17): Cotton aphids appeared this week in Tift County, causing some crumpling of small leaves in a few fields. Parasitization well established in most fields, showing good control from Lysiphlebus testaceipes Cress. and ladybirds. (May 24): Aphids have increased in small areas in some fields in Tift, Berrien, Lowndes, and Echols Counties. One field showed about 1 acre heavily infested.

Florida. C. S. Rude (May 3): Aphids observed in two fields of young cotton, but parasites and predators seemed to be holding them in check.

Alabama. J. M. Robinson (May 23): Cotton aphids found on cotton at Prattville on May 21.

Mississippi. C. Lyle and assistants (May 24): Injury to small cotton plants in the State College area by A. gossypii has ceased since the hot weather began, according to report. A few specimens observed on cotton in the Durant district.

E. W. Dunnam, et al. (May 10): One cotton plant in Washington County found heavily infested in cotton planted on March 24. A few of the large forms were parasitized. (May 24): Three hundred cotton plants of 1 variety examined showed 49 infested with 119 aphids, and 300 of another variety showed 52 infested with 68 aphids. No parasites seen on the Experiment Station when records were made. Observations indicate that aphids and parasites are decreasing on seedling cotton growing next to the woods. Many winged aphids among those counted on the Experiment Station; so far as can be determined, all aphids are of the large forms.

Louisiana. R. C. Gaines, et al. (May 3): All fields of early cotton in Madison Parish observed during the week were found to have a light infestation. Neither parasites nor predators were observed.

THRIPS (Thysanoptera)

South Carolina. F. F. Bondy, et al. (May 17): Two species of thrips, Frankliniella fusca Hinds and Sericothrips variabilis Beach, were found on cotton in Florence County during the week, doing some injury.

Mississippi. C. Lyle (May 24): Specimens of thrips (Frankliniella sp.) were collected from cotton in Holmes County on May 20.

E. W. Dunnem, et al. (May 24): Examination of 300 cotton plants of 1 variety in Washington County showed an infestation of 441 thrips, and 300 plants of another variety were infested with 397 thrips.

Louisiana. R. C. Gaines, et al. (May 24): Thrips observed in several cottonfields in Madison Parish.

Texas. F. L. Thomas (May 14): Evidence of injury is beginning to appear in the oldest planted cottonfields of the Brazos Valley.

FOREST AND SHADE-TREE INSECTS

PERIODICAL CICADA (Magicicada septendecim L.)

Virginia. A. M. Woodside (May 22): Cicadas were heard at Afton and Greenwood, in Albemarle County, on May 8 and 15, at Crozet on May 15 and 22, and one individual was seen on the latter date. They were not numerous. A few were seen and heard near Staunton, Augusta County, on May 23.

Missouri. L. Haseman (May 26): On May 16 a single specimen was picked up on the street in Columbia, which probably merely represents a stray specimen, though a year ago specimens practically ready to emerge were dug up.

CANKERWORMS (Geometridae)

Connecticut. P. P. Wallace (May 23): Infestation was generally very light throughout the State on elm. Occasional localities showed feeding had caused some injury.

New York. N. Y. State Coll. Agr. News Letter (May): In Rockland County the worms are confined mostly to the Suffern-Airmont area, where they are plentiful. Injury to foliage is also noticed on Long Island. In Niagara County cankerworms are quite numerous on apple foliage.

New Jersey. R. R. Whitten and R. T. Webber (May 26): On May 14 and 20 two-thirds of the crowns of woodland elms were defoliated in the vicinity of Lamington in Somerset County. Heavier defoliation was reported in the Passaic River Valley, Morris County; also near Peapack,

Somerset County, in the northern part of the State, on some pasture elms. This infestation appears to be the beginning of another epidemic of the species in this region where it caused considerable damage between 1934 and 1937.

Pennsylvania. G. B. Slesman (May 21): The spring cankerworm (Paleacrita vernata Peck) shows evidence of being very heavy on forest and shade trees in the Philadelphia area.

Ohio. E. W. Mendenhall (May 20): Spring cankerworms and the fall cankerworm (Alsophila pometaria Harr.) are abundant throughout western Ohio and more severe in neglected farm apple orchards. Quite abundant on elms and other shade trees.

N. F. Howard (May 17): Cankerworms are numerous and destructive to elm trees along the Olentangy River.

Indiana. P. T. Ulman (May 22): Spring cankerworm outbreak is very heavy on trees and shrubs at Indianapolis and Noblesville and has spread into adjacent areas where damage had not previously been reported. A check on one area showed complete defoliation of apple, elm, hackberry, walnut, maple, boxelder, buckeye, oak, and locust.

J. J. Davis (May 27): The spring cankerworm is very abundant throughout the northern half of the State. Many trees are being defoliated, and those preferred are elm, hackberry, and apple.

Illinois. W. P. Flint (May 24): Very heavy cankerworm defoliation has occurred in many areas in the northern three-fourths of the State. The worms are now through feeding except in the extreme northern part of the State. Very little parasitization has been observed.

Wisconsin. C. L. Fluke (May 23): Very common in southern Wisconsin, especially on elms.

Tennessee. G. M. Bentley (May 1): Spring cankerworms are occurring on unsprayed apple trees in Memphis, Shelby County.

Minnesota. A. G. Ruggles (May 19): The spring and fall cankerworms are more numerous than for many years in Ramsey and Hennepin Counties, in the eastern part of the State.

Iowa. H. E. Jaques (May): Cankerworms were abundant in the extreme southeastern corner of the State.

C. J. Drake (May 29): The spring cankerworm is extremely abundant throughout a large portion of central Iowa. Many elm and apple trees and, to a lesser extent, white oak, hackberry, and linden trees, have been defoliated in Story, Mitchell, Tama, Benton, Linn, Johnson, Jackson, Clinton, Scott, Muscatine, Louisa, Iowa, Dallas, Polk, Boone, Guthrie, Audubon, Cass, Adair, Pottawattamie, and Mills Counties. The fall cankerworm does not seem to be so abundant.

Missouri. L. Haseman (May 26): With the infestation lighter than in 1940, most larvae in central Missouri were through feeding by May 15. In the north-central part of the State, untreated orchards have been completely stripped.

North Dakota. F. G. Butcher (May 23): Cankerworms are appearing in abundant numbers on elm trees throughout several locations in the eastern part of the State, especially along the Shoyenne River in Cass and Ransom Counties, in city planting in Cavalier, Pembina County, and in various plantings in Minot, Ward County. At Minot the peak moth emergence occurred on about April 9.

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Worms have again occurred in outbreak numbers along the Missouri River, where they are defoliating trees.

Nebraska. D. B. Whelan (May 7): P. vernata infestation reported on elms on the courthouse lawn in Franklin County.

Kansas. H. R. Bryson (May 26): Cankerworms have caused considerable injury to elm trees as far north as Phillips County, in the north-western part of the State. Many cities avoided serious injury by spraying and banding. Other reports have been received from Edwardsville, Wichita, and Fort Scott, in the eastern part of the State.

Oklahoma. J. M. Maxwell (April 21): The spring cankerworm is causing damage to apples and other orchard and shade trees in the central section of the State, damage in the east-central section being quite severe.

FOREST TENT CATERPILLAR (Molacosoma disstria Hbn.)

Massachusetts. J. V. Schaffner, Jr. (May 23): Still locally abundant in parts of Berkshire County, particularly in the vicinity of Richmond near the New York State line. Hatching was general on April 25, and there was a very good hatch.

W. W. Bancroft (May 27): Considerable feeding has been noticed on maple, birch, and oak on the Taconic Range, Hancock-Pittsfield, and Lenox.

Connecticut. R. C. Brown (May 23): The forest tent caterpillar, nearly full-grown, was noted in New Haven County.

New York. E. P. Felt (May 23): Scattering abundant in Rockland County and extremely numerous on the edges of the Catskills. The prospects favor somewhat general defoliation in many areas.

Mississippi. C. Lyle (May 24): Caterpillars reported as being so abundant in Covington and Jones Counties in late April and early May that they were getting into homes. Also reported defoliating peach trees in Covington County.

Utah. G. F. Knowlton and assistants (May 22): Poplar foliage attacked by forest tent caterpillars at Moroni, and maple at Murray. They were seriously injuring poplars, willows, and several other kinds of trees and shrubs at Park City, Summit County, and Japanese quince and Japanese rose at Morgan. Tent caterpillars (Malacosoma spp.) did much more damage to shade trees and ornamentals than previously at Springdale, Rockville, and Hurricane, Washington County, in April. They were causing considerable annoyance in houses. (May 9): Injury was severe in the Green River and Elgin areas, especially on poplars and cottonwoods; also damaging shade trees at Bluff, San Juan County. Caterpillars were severely damaging foliage of cherry, peach, apricot, and apple trees in orchards; also black willow, elm, poplar, boxelder trees, and ornamental shrubs in the vicinity of Moab and southeast in Spanish Valley. Orchard and shade trees severely damaged throughout Wayne County. (May 13): There were reports of cherry trees being damaged in an orchard at East Kayville.

NEVADA BUCK-MOTH (Homileuca nevadensis Stretch)

Nebraska. H. D. Tate (May 17): A twig of cottonwood tree, infested with eggs, was received from Hitchcock County on April 30, and a twig from a Chinese elm tree, infested with eggs, was received from the same county on May 6.

BROWN-TAIL MOTH (Hygmia phaeorrhoea Donovan)

New England. L. D. Casey (May 23): Heavy scattered infestations in York County, Maine, in Rockingham and Strafford Counties, N.H., and in Essex County, Mass. Many old apple and pear orchards were completely defoliated.

A BORER (Scolytus sulcatus Lec.)

Connecticut. P. P. Wallace (May 23): Abundant in apple trees injured by flood near the Connecticut River, causing only secondary injury, at Portland, Middlesex County. The insect was common in maple and elm in East Windsor, Hartford County, in hurricane-injured trees.

TERRAPIN SCALE (Lecanium nigrofasciatum Perg.)

Missouri. L. Haseman (May 26): Reported as completely encrusting branches of osage orange in north-central Missouri.

COMMON RED SPIDER (Tetranychus telarius L.)

Indiana. J. J. Davis (May 27): Very severe on conifers at La Fayette. Early appearance is probably caused by dry weather.

ASH

AN APHID (Prociphilus fraxinifolii Riley)

Arizona. C. D. Lebert (May 15): A general, heavy infestation on most ash trees in the Phoenix area occurred during the first half of May. Severe leaf curl and much drip from honeydew resulted. Several parasites and predators were observed.

Utah. G. F. Knowlton (May 14): Was curling leaves of ash at Taylorsville and Salt Lake City. (May 20): Curled ash foliage at Moroni. (May 22): Curled green ash foliage at Morgan.

ASH MIDRIB GALL (Contarinia canadensis Felt)

Maryland. E. P. Felt (May 23): Found extremely abundant on one tree at Baltimore.

AN ASH SAWFLY (Tomostethus multicinctus Roh.)

Minnesota. A. G. Ruggles (May 19): An ash sawfly, probably this species, was stripping many ash trees around Saint Paul and Minneapolis.

BIRCH

BRONZE BIRCH BORER (Agrilus anxius Gory)

Ohio. E. W. Mendenhall (May 23): Destroying nearly all of the birch trees in Dayton, Springfield, and Columbus.

Iowa. C. J. Drake (May 29): The bronze birch borer has been reported in cut-leaf birches in Varina, in the northwestern part of the State, and in Des Moines.

BOXELDER

BOXELDER APHID (Periphyllus negundinis Thos.)

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Bad on boxelders.

Utah. G. F. Knowlton (May 22): Beginning to be abundant on the foliage at Nephi and Morgan.

PIGEON HORNTAIL (Tremex columba L.)

Utah. G. F. Knowlton (May 14): Killing several large boxelders at Taylorville, Salt Lake County.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

Massachusetts. E. A. Back (May 26): Annoying in households at Lowell on April 21; at Winchester on April 23, at Wellesley Hills and Belmont on April 30, at Wakefield on May 14, and at Dover, in the eastern part of the State, on May 26.

Rhode Island. E. A. Back (April 23): Annoying in households at Saylesville, Providence County.

New York. R. E. Horsey (May 23): Reported as common in an old house which is occupied part of the time. The house is located in a subdivision

of Rochester that was formerly a nursery and a large amount of elm brush and trees were found to have the characteristic holes in the young leaves and fresh-laid eggs. A number of beetles were caught in the house the past week.

E. A. Back (May 26): Annoying in households at Millbrook, Dutchess County, and Nyack, Rockland County, on April 25, at Tarrytown, Westchester County, on April 26, at Yonkers on April 24, at Irvington-Hudson on April 24, at New York City on April 20, at Montgomery, Orange County, on May 14, at Millbrook on May 17, at Washington on May 19, and at Thornwood, Westchester County, on May 26.

New Jersey. C. L. Griswold (May 26): Adults out of hibernation in Morristown vicinity were first observed on April 15, which is nearly 4 weeks earlier than last year when adults were observed on May 12. First oviposition of the season was noted on May 7.

E. A. Back (May 26): Annoying in households at Madison on April 22 at Montclair on May 17, at Morristown on May 14, and at East Orange on May 16.

Pennsylvania. E. A. Back (May 26): Annoying in households at Pottstown on May 5, at Dillsburg, York County, on April 30, at Philadelphia on May 19 and 26, and at Washington Crossing on May 26.

Maryland. E. N. Cory (April 24): Egg laying observed today at College Park on elms.

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus Marsham)

New Jersey and New York. C. W. Collins, et al. (May 14): Emergence and activity of bark beetles was noted to be at least 2 weeks earlier this year than last. On May 1 emergence of this species was observed in southern New Jersey and at Peekskill, N. Y.

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes Eich.)

New Jersey. C. W. Collins, et al. (May 14): Overwintering adults were observed on April 11; eggs in new maternal galleries were seen on April 23.

ELM LEAF MINER (Agromyza ulmi Frost)

Connecticut. E. P. Felt (May 23): Although a native insect and reported as common in Pennsylvania, has been noted for the first time in southwestern Connecticut; it is apparently somewhat common though not especially injurious.

ELM COCKSCOMB GALL (Colopha ulmicola Fitch)

Delaware. L. A. Stearns (April 24): Noted on elm at Felton in Kent County.

WOOLLY APPLE APHID (Eriosoma lanigerum Hausm.)

Georgia. J. M. Robinson (May 23): Found on elms at West Point.

Mississippi. C. Lyle and assistants (May 24): Some damage to elm leaves in Lauderdale County; also observed on young apple trees in Holmes and Scott Counties.

EUROPEAN ELM SCALE (Gossyparia spuria Mod.)

Utah. G. F. Knowlton (May 16): Has been damaging many trees at Logan. Injury was also noticed at Brigham. (May 22): Was attacking a long row of trees surrounding the fair ground, and elms on the courthouse ground, at Morgan. Injury is apparent on many trees.

FIR

APHIDS (Aphididae)

Pennsylvania. G. B. Sleesman (May 24): Egg masses of an aphid were found on the branches and trunks of Abies nordmanniana, Nordmann fir, in Philadelphia. No adults were found. (May 21): Mindarus abietinus Koch appeared on concolor fir and Abies veitchi about a month ago in Philadelphia. Winged adults have left the host plants. Efforts were made to determine what host plants these insects were going to but had not been determined yet.

JUNIPER AND CEDAR

JUNIPER WEBWORM (Dichomeris marginellus F.)

Delaware. L. A. Stearns (May 2): Attacked juniper at Bridgeville.

Pennsylvania. G. B. Sleesman (May 21): A very heavy infestation found in various localities of the Philadelphia vicinity. In some localities the insect is still in the larval form, others have pupated, and in other places, the moths are emerging.

CEDAR BARK BEETLE (Phloeosinus dentatus Say)

Virginia. L. A. Hetrick (May 20): Adults and larvae are numerous in King William County under the bark of several dying red cedar trees.

JUNIPER SCALE (Diaspis carueli Targ.)

Oregon. J. Schuh (May 20): This scale is in the egg stage on juniper at Portland.

HICKORY

HICKORY BORER (Cyllene caryae Gahan)

Illinois. A. F. Satterthwait (May 24): Appeared in numbers in the Urbana-Champaign Japanese beetle traps from April 29 to May 8.

LARCH

LARCH CASEBEARER (Collocophora laricella Hbn.)

Massachusetts. C. E. Hood (May 20): Has caused an almost total browning of a large number of larch trees in the western section of the State.

W. W. Bancroft (May 27): Infestation general and severe throughout western Massachusetts.

New York. E. P. Felt (May 23): Injury is somewhat conspicuous here and there in areas within 50 miles of New York City.

R. E. Horsey (May 2): Numerous on American, Dahurian, and other larches in an ornamental planting at Rochester.

LOCUST

A CECIDOMYIID (Dasyneura gleditschiae O.S.)

Alabama. F. S. Arant (April 22): Larvae were doing considerable damage to plants of honey locust at Auburn. (Det. by C. T. Greene.)

SAWFLIES (Tenthredinidae)

Missouri. W. F. Turner (May 26): Locust sawfly is exceedingly abundant throughout much of the State where black locust has been planted extensively in connection with soil conservation. The oldest larvae began maturing during the third week in May.

MAPLE

WOOLLY MAPLE SCALE (Phenacoccus acericola King)

Georgia. M. Murphey, Jr. (May 28): Numerous reports and specimens from Atlanta brought into the office during the past 2 weeks. The woolly covering blowing on porches and into houses is bothersome. Honeydew is very abundant.

BLADDER MAPLE LEAF GALL (Phyllocoptes quadripes Shim.)

Indiana. J. J. Davis (May 27): Rather prevalent in central Indiana during the last few weeks.

Connecticut. E. P. Felt (May 23): Locally abundant on soft maples in southwestern Connecticut.

Ohio. T. H. Parks (May 23): Specimens received from several correspondents during the month.

Michigan. R. Hutson (May 21): On May 5 this insect was reported from Detroit, Jackson, Fennville, Shelbyville, and Ann Arbor, in the southern part of the State.

GOUTY MAPLE GALL (Dasyneura communis Felt)

Indiana. J. J. Davis (May 27): Rather prevalent the last few weeks, according to reports from many parts of central Indiana.

Kentucky. W. A. Price (May 26): Noted on maple and oak, and more common than usual.

OCELLATE MAPLE LEAF GALL (Cecidomyia ocellaris O.S.)

Indiana. J. J. Davis (May 27): Rather prevalent the past few weeks in central Indiana.

AN APHID (Drepanaphis acerifoliae Thos.)

Arkansas. W. J. Baerg (May 9): Apparently rather heavily infesting the sugar maple trees in Fayetteville, in the northwestern part of the State. Some of the trees are shedding to an alarming degree.

A MIRID (Coccobaphes sanguinarius Uhl.)

Tennessee. G. M. Bentley (May 23): On May 15 the maple bug occurred in great quantities on hard maple trees in Knoxville, Knox County. Falling to the ground the insects were found upon the grass. The brilliant red of these insects attracted considerable attention. The first time this insect was noted occurring in large numbers in the State.

OBSOLETE SCALE (Chrysomphalus obscurus Comst.)

Tennessee. G. M. Bentley (May 23): Occurred on sugar and soft maples in Knoxville and caused death to the limbs in several infestations.

AN OLETHREUTID (Prateolus aesculana Riley)

Tennessee. W. F. Turner (May 12): Small lepidopterous larvae boring in tips of new shoots of silver maple, collected May 6 at Chattanooga, were reported as causing severe injury on several trees. Were present last year also. (Det. by C. Heinrich.)

MESQUITE

A PHALAENID (Melipotis acontoides Guen.)

Arizona. C. D. Lebert (May 12): The Palo Verde semi-looper was observed on several mesquite trees in the Phoenix area. Was moderately abundant. Found crawling into houses in one instance.

OAK

OAK LEAF ROLLER (Argyrotoxa semipurpurana Kearf.)

New Jersey. C. L. Griswold (May 26): Severe defoliation of pin oak was observed on May 24 at the East Orange Water Reservation, Essex County,

and in Florham Park. This is the fourth successive year in which defoliation by this insect has been observed in these areas.

GALL INSECTS (Andricus spp.)

Massachusetts. E. P. Felt (May 23): A. clavulus O. S., the white oak gall, caused a somewhat general infestation on a large tree in the Boston area.

Connecticut. E. P. Felt (May 23): The oak crown gall, A. coronus Boutn., was found somewhat commonly on pin oaks at Bridgeport and Stamford.

New York. E. P. Felt (May 23): A. coronus was found somewhat commonly on pin oaks at Westbury, L. I.

Mississippi. C. Lyle (May 24): The cecidomyiid, Parallelodiplosis florida Felt caused galls on oak leaves from Coahoma County on May 13.

AN APHID (Longistigma caryae Harr.)

Maryland. R. W. Riemenschneider (May 14): Large black aphids (both winged and wingless) collected in Hyattsville on May 13. Aphids occurred in groups or masses on the lower portions of the trunks of white oak trees 10 to 12 inches in diameter. (Det. by P. W. Mason.)

A LACEBUG (Corythucha arcuata Say)

Delaware. L. A. Stearns (May 24): Overwintered adults were abundant in New Castle County on white oak after May 15, and egg laying was in progress.

PUBESCENT OAK KERMES (Kermes pubescens Bogue)

Nebraska. H. D. Tate (May 17): Bur oak twigs sent in from Gage County, in the southeastern part of the State, on April 16 were found infested.

AN OAK SCALE (Locanium quercifex Fitch)

Mississippi. C. Lyle (May 24): Specimens on oaks were received from Hinds and Jasper Counties the last week in April and the first week of May.

PINE

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana Schiff.)

Connecticut. E. P. Felt (May 23): Pupation has commenced at Stamford.

J. V. Schaffner, Jr. (May 23): Observed as abundant in forest and ornamental plantings of pine, particularly red pine, in many localities through Fairfield and New Haven Counties.

New York. E. P. Felt (May 23): Is somewhat generally prevalent; one bad infestation being reported from Rockland County.

J. V. Schaffner, Jr. (May 23): Observed as abundant in forest and

ornamental plantings of pine, particularly red pine, in many localities through Nassau and Westchester Counties.

New Jersey. J. V. Schaffner, Jr. (May 23): Observed as abundant in forest and ornamental plantings of pine, particularly red pine, in many localities through Morris County.

A PINE SHOOT MOTH (Rhyacionia rigidana Fern.)

Virginia. L. A. Hetrick (April 30): First emergence of adults from infested pine shoots collected last September in Mathews County were held in insectary at West Point. (Det. tentatively from larvae by C. Heinrich.)

A PINE LOOPER (Ellopia pellucidaria G. & R.)

Virginia. L. A. Hetrick (May 1): Adults were abundant in pine woods in King William, King and Queen, and Caroline Counties, in the eastern part of the State.

PINE SAWFLIES (Tenthredinidae)

New Jersey. C. L. Griswold (May 26): First adults of and egg laying by Acantholyda erythrocephala L. observed on April 26 at Morristown. Larvae in second- and third-feeding instars noted on May 26. Observations of this species in Morris, Essex, and Somerset Counties up to May 26 indicate a decrease in the population from that of last year.

F. A. Soraci (May 15): Eggs of this species observed hatching today near Clinton on Pinus resinosa.

C. L. Griswold (May 26): General, as well as first observed hatching of a pine sawfly, Neodiprion sertifer Geoff., noted on April 19 in the vicinity of Morristown, which is nearly 4 weeks earlier than in 1940, when hatching was first observed on May 7. Observations on May 23 and 24, when the larvae were found to be in the last two feeding instars, indicated a further increase in the population of this sawfly over the preceding year in Morris, Essex, and Somerset Counties.

XYELID GALLS (Xyela spp.)

Virginia. L. A. Hetrick (May 20): Galls containing larvae are abundant on tender new growth shoots of Pinus taeda in King and Queen County. Galls cause death of the shoots or result in deformed branches. (Det. by R. A. Cushman.)

PINE BEETLES (Dendroctonus spp.)

Massachusetts. E. P. Felt (May 23): Turpentine beetles, both D. valens Lec. and D. terebrans Oliv., are causing considerable injury to pines in the Cape Cod area.

PALES WEEVIL (Hylobius pales Hbst.)

Massachusetts. E. P. Felt (May 23): Caused considerable injury to small pines in the Cambridge area and also at Taunton.

Rhode Island. B. Eddy . . . (April 31): Although no weevils have been submitted, there is evidence of extensive feeding on white pine reproductions in sunny areas. Apparently as a result of the drying out of hurricane-felled timber the beetles are transferring their attention to young growth.

APHIDS (Aphidæ)

Connecticut. E. P. Felt (May 23): Cinara strobi Fitch appears to have been abundant and at least somewhat injurious to white pines in scattered localities in southwestern Connecticut.

Pennsylvania. G. B. Sleesman (May 21): Aphids (undetermined) were found feeding on the new growth of jack pine in large numbers at Philadelphia. Both wingless and winged forms were present. (May 21): Aphid noted on new growth of Scotch pine in Philadelphia. Numerous egg clusters were found on stems where winged adults were found.

Maryland. E. N. Cory (April 30): There was a light infestation of Pineus strobi Htg. at Pikesville, Roslyn County, on white pine.

Michigan. R. Hutson (May 21): Lachnus sp. very numerous at Grand Rapids on white pine on May 20 as well as at Milford on jack pine.

PINE LEAF SCALE (Chionaspis pinifoliae Fitch)

Connecticut. M. P. Zappe (May 22): Appears to be increasing in abundance. Noted on Mugho, red, and Scotch pines. A number of years ago this insect was rather scarce but is now rather plentiful, especially on ornamental plantings of Mugho pines.

New York. E. P. Felt (May 23): Moderately abundant and in some cases extremely so on Mugho pine in much of the area within 50 miles of New York City.

Nebraska. H. D. Tate (May 17): Samples of injury to spruce were submitted from Sheridan and Lincoln Counties on April 28 and May 9, respectively.

SPRUCE

SPRUCE NEEDLE MINER (Toniva albolineana Kearf.)

Michigan. R. Hutson (May 2): Specimens were received from Pontiac and Detroit.

SPRUCE LEAF TIER (Epinotia nanana Treit.)

Michigan. R. Hutson (May 1): Larvae of this needle miner were submitted from Pontiac.

SITKA SPRUCE GALL APHID (Adelges cooleyi Gill.)

Connecticut. E. P. Felt (May 23): Somewhat abundant and injurious in southwestern Connecticut.

New York. E. P. Felt (May 23): Is somewhat abundant and injurious in southeastern New York.

Pennsylvania. G. B. Skeesman (May 21): A very heavy infestation has been observed, both on Douglas fir and spruce, in Philadelphia. Winged insects were observed migrating from fir to spruce last week in large numbers.

EASTERN SPRUCE GALL APHID (Adelges abietis L.)

Pennsylvania. G. B. Skeesman (May): Infestations seem to be increasing in Philadelphia. It has been found this year on Norway spruce in several new locations where it had not been found previously.

SPRUCE BUD SCALE (Physokermes piceae Schr.)

New York. E. P. Felt (May 23): Found on a badly infested Norway spruce at Cazenovia, Madison County; also reported from Westchester County.

A SAWFLY (Tenthredinidae)

Minnesota. A. G. Ruggles (May 19): A pamphiliid sawfly larva is doing a great deal of damage to new growth of spruces in Ramsey and Hennepin Counties.

WILLOW

LEAF BEETLES (Chrysomela spp.)

Ohio. T. H. Parks (May 23): Larvae of the spotted willow leaf beetle, C. lapponica L., have been feeding on willow leaves in Columbus during May.

Indiana. J. J. Davis (May 27): C. lapponica and C. scripta F. are abundant in many parts of the State. They showed up in unusual numbers in southern Indiana early in the month.

Mississippi. C. Lyle (May 24): C. scripta specimens were received from Jasper County on May 9.

IMPORTED WILLOW LEAF BEETLE (Plagiodera versicolora Laich.)

Virginia. A. M. Woodside (May 24): Small pussy willow trees at Fisherville, Augusta County, were fairly heavily infested. Damage was light.

INSECTS AFFECTING GREENHOUSE AND
ORNAMENTAL PLANTS

A SCALE (Parlatoria chinensis Marlatt)

Missouri. L. Haseman (May 26): Crawlers observed about the middle of May at Saint Louis, with eggs appearing a week or 10 days earlier.

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

South Carolina. F. F. Bondy, et al. (May 17): Seriously injuring roses. Also appeared on other shrubbery on two properties in Florence during the week. Severe infestation.

Missouri. J. A. Denning (March 7): Specimen of an insect new to us found in a Saint Louis greenhouse. (Det. by H. Morrison.)

Texas. R. K. Fletcher (May 22): On May 19 orange and rose in Harris County were infested by the cottony-cushion scale.

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

Maryland. E. N. Cory (April 24): Present on lilac at Thurmont, Frederick County.

Nebraska. H. D. Tate (May 2): Heavily infested lilac twig received from Lincoln County.

Minnesota. A. G. Ruggles and assistants (May 11): Very abundant in Lewiston, Winona County, in the southeastern part of the State.

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): Reported frequent from various parts of the State.

Utah. G. F. Knowlton (May 14): Poplars at Taylorsville, Salt Lake County, heavily infested. (May 22): Several lilac bushes and some poplar and willow trees at Morgan have been damaged.

HAIRY CHINCH BUG (Blissus hirtus Montd.)

Maine. J. H. Hawkins (May 6): Unusually abundant in grassland, and present in many hayfields and in grass along roadsides throughout central Maine. (Det. by H. G. Barber.)

BLACK VINE WEEVIL (Brachyrhinus sulcatus F.)

Rhode Island. B. Eddy (May 6): Grubs are very numerous around base of Taxus plants in Cranston, Providence County.

Maryland. E. N. Cory (April 16): Present on yews at Baltimore.

ARBORVITAE

ARBORVITAE LEAF MINER (Argyresthia thuiella Pack.)

Connecticut. E. P. Felt (May 23): Moderately abundant and somewhat injurious in southwestern part of the State.

AZALEA

AZALEA SCALE (Eriococcus azaleae Comst.)

Mississippi. C. Lyle and assistants (May 24): Specimens of infested azalea plants received from Adams and Coahoma Counties, in the western part of the State. Reported as injuring azalea in Copiah, Pike, and Walthall Counties, in the southwestern part of the State.

AZALEA LACEBUG (Stephanitis pyrioides Scott)

Mississippi. C. Lyle (May 24): Lacebugs probably belonging to this species were reported as severely damaging azalea plants in the Meridian territory.

BARBERRY

BARBERRY APHID (Rhopalosiphum berberidis Kltb.)

Utah. G. F. Knowlton (May 22): Attacking ornamental barberry at Morgan.

BOXWOOD

BOXWOOD LEAF MINER (Monarthropalpus buxi Laboulb.)

Rhode Island. B. Eddy (May 6): Indications are that this insect will be particularly destructive on dwarf and larger varieties of boxwood.

Pennsylvania. T. L. Guyton (May 2): Found on boxwood bushes at Pottstown, Montgomery County.

District of Columbia. L. G. Baumhofer (May 2): First emergence today in Washington, 12 days earlier than in 1940.

CANNA

LESSER CANNA LEAF ROLLER (Geshna cannalis Quaint.)

Mississippi. C. Lyle (May 24): Specimens received from Lincoln County early in May.

CHRYSANTHEMUM

CHRYSANTHEMUM APHID (Macrosiphoniella sanborni Gill.)

Georgia. P. M. Gilmer (May 3): Considerable numbers have been noted in Tift, Lowndes, and Echols Counties.

DAHLIA

STALK BORER (Papaipema nebris nitela Guen.)

Alabama. J. M. Robinson (May 7): Found on dahlias at Birmingham.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

Connecticut. E. P. Felt (May 23): Found extremely abundant on a small planting of Euonymus alatus at Southport, Fairfield County.

South Carolina. F. F. Bondy, et al. (May 17): Heavy infestations observed in one location in Florence during the week ended May 17.

Texas. R. E. Fletcher (May 13): Heavy infestation on euonymus in Dallas County.

GLADIOLUS

GLADIOLUS THRIPS (Taeniothrips simplex Morison)

South Carolina. W. M. Upholt (May 14): Found causing light to moderate damage on gladiolus foliage at Clemson.

Alabama. J. M. Robinson (May 23): Found on gladioli at Montgomery.

JUNIPER AND CEDAR

AN APHID (Cinara juniperi Deg.)

Virginia. G. J. Haecussler (April 13): Severe infestation observed on juniper shrubs at Charlottesville. (Det. by P. W. Mason.)

LILY

A THRIPS (Parthenothrips dracaenae Heeger)

Mississippi. C. Lyle (May 24): Specimens on calla lily from Adams County sent in on May 5. First time this insect has been received in this office.

MOCKORANGE

BEAN APHID (Aphis runcidis L.)

Michigan. R. Hutson (May 21): Very noticeable on mockorange and species of euonymus about East Lansing.

RHODODENDRON

RHODODENDRON MIDGE (Giardomyia rhododendri Felt)

New York. E. P. Felt (May 23): Specimen of damage received from White Plains.

ROSE

APHIDS (Aphidae)

South Carolina. F. F. Bondy, et al. (May 17): Reported as injuring roses at Florence during the week ended May 17.

Alabama. J. M. Robinson (May 15): Rose aphids were found on roses at Auburn.

Mississippi. G. L. Bond (May 24): Aphids on roses reported from the southeastern counties.

Missouri. L. Haseman (May 26): Aphids reported as numerous on roses.

Utah. G. F. Knowlton (May 16): Aphids are moderately abundant on terminal growth and buds of wild rose at Brigham, Perry, and Willard. (May 18): Macrosiphum solanifolii Ashm. is attacking succulent rose tips at Salt Lake and Brigham.

Washington. L. G. Smith (April): Rapid build-up of aphid population on a climbing rose on the south side of a house at Yakima was reported on April 24. Moderate damage was done. On April 29 aphids were reported as doing severe damage to tea roses at Moscow, Idaho, near the Washington border.

THRIPS (Thysanoptera)

Mississippi. L. J. Goodgame (May 24): Several complaints of thrips on roses in Monroe County.

Texas. R. K. Fletcher (May 22): Frankliniella tritici Fitch and unidentified thrips have been very abundant, and have done considerable damage to roses during the last month in Brazos County.

ROSE CURCULIO (Rhynchites bicolor F.)

Utah. G. F. Knowlton (May 20): Found on wild rose at Moroni.

SNOWBALL

APHIDS (Aphidae)

Utah. G. F. Knowlton (May 13): Two species of aphids are injuring snowball leaves and blossoms in various parts of Davis County. (May 22): Aphis rumicis L. and A. viburnicola Gill. are extremely abundant, destroying blossoms and tightly curling all leaves on snowball bushes on the courthouse grounds at Morgan.

SPIREA

SPIREA APHID (Aphis spiraeicola Patch)

Ohio. E. W. Mendenhall (May 20): Numerous and causing some damage to spirea plants at Columbus.

Missouri. L. Haseman (May 26): Terminal growth on spirea fairly covered with a small, green aphid.

INSECTS ATTACKING MAN AND
DOMESTIC ANIMALS

MAN

MOSQUITOES (*Culicinae*)

Florida. J. B. Hull (April 30): A very few mosquitoes, all of which were Aedes sollicitans Walk., were observed on the island east of Fort Pierce during the month.

Missouri. L. Haseman (May 26): Species of pest mosquitoes have been very annoying since the middle of May, through central Missouri, in areas close to favorable breeding grounds.

Utah. G. F. Knowlton (May 20): Aedes dorsalis Meig. and A. campestris D. & W. are annoying to man and to recently shorn sheep west of Chester, Manti, and near Wales, in Sanpete County.

SANDFLIES (*Culicoides* spp.)

Florida. W. E. Dove (May 14): Sandflies, C. mississippiensis Hoffm., were present in annoying numbers near breeding places and in the vicinity of nearby residences.

J. B. Hull (April 30): More sandflies were observed in the vicinity of Fort Pierce during the month of April than in several months. Annoyed humans residing along the Indian River Drive and north of the Inlet and those in the Maravilla subdivision for a few nights.

Missouri. L. Haseman (May): Punkies were extremely abundant and annoying during the third week in May at two or three different points in the central part of the State.

FLEAS (*Ctenocephalides* sp.)

South Carolina. F. F. Bondy, et al. (May 24): The report for the week ended May 24 in Florence, Florence County, showed a heavy infestation of dog fleas from one home.

Florida. W. V. King and F. C. Bishopp (May): Cat fleas (*Ctenocephalides*) were reported on May 27 as infesting several houses at Orlando. One infestation beneath a house and in a yard was found to be C. felis Bouche.

Mississippi. C. Lyle (May 24): Fleas were reported to be numerous about dwellings and barns in one locality in Noxubee County and one in Tallahatchie County but no specimens were received.

Missouri. L. Haseman (May 26): Heavy flea infestations on farms throughout the State have been reported and some, when checked, proved to be caused by hogs.

BEDBUG (Cimex lectularius L.)

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): More than the usual number of inquiries have been received concerning bedbugs, cockroaches, and black carpet beetles.

LONE STAR TICK (Amblyomma americanum L.)

Florida. W. E. Dove (May 15): This tick was observed occasionally on animals during the month, but not in large numbers, at Panama City.

Mississippi. C. Lyle (May 24): Specimens sent in for identification from Leake County, in the central part of the State, on April 26.

Missouri. L. Haseman (May 26): The lone star tick continues to attack dogs, cats, and man in central Missouri in greater numbers than has been observed in recent years. A number of the females have been laying eggs, and reports indicate that seed ticks are beginning to prove annoying in different parts of southern Missouri.

GULF COAST TICK (Amblyomma maculatum Koch)

Florida. W. E. Dove (May 19): Adults of the Gulf coast tick were observed at Bonifay, Holmes County, in the northwestern part of the State. One male and one female were found on a single animal.

AMERICAN DOG TICK (Dermacentor variabilis Say)

Massachusetts. C. M. Smith (April 30): Adults of the American dog tick became very active during April; larvae became moderately abundant on mice, and some nymphal activity was observed at Vineyard Haven.
(May 21): Adults became numerous early in May, slightly sooner than in some years. Abundance in most areas will apparently be greater than normal, but not as great as in 1939.

Missouri. L. Haseman (May 26): The dog tick continues to attack dogs, cats, and man in greater numbers than has been observed in recent years in central Missouri. A number of the females have been laying eggs and reports indicate that seed ticks are beginning to prove annoying in different parts of the southern section of the State.

CATTLE

SCREWORM (Cochliomyia americana C. & P.)

Florida. F. C. Bishopp (May 24): Apparently very little trouble is being experienced with screwworms along the east coast. At New Smyrna, Volusia County, on the east coast, however, a few cases were reported as occurring during the spring. One dairyman reported that one calf out of four dropped within the last few weeks was found to be infested. Infestation in the Kissimmee area is relatively light and flies are not very persistent. J. Gunn, of Kissimmee, stated that about

1 or 2 percent of the calves dropped during the last 6 weeks were infested and that they usually healed with one treatment. Hogs in the northern part of Osceola County and in the southern part of Orange County have been infested. One herd of 60 hogs was about 20 percent infested.

California. A. W. Lindquist and C. C. Deonier (April 28): Reporters feel certain that C. macellaria F. and C. americana are nonexistent north of Sacramento, and will remain so unless brought in by infested livestock.

STABLEFLY (Stomoxys calcitrans L.)

Florida. W. E. Dove (May 19): Adult dog flies on range cattle vary from 2 or 3 to 10 or 15 per animal.

Missouri. L. Haseman (May 26): Stableflies were observed annoying livestock in central Missouri by the middle of May.

HORNFLY (Haematobia irritans L.)

Florida. E. C. Dishopp (May 20-27): A dairy herd near New Smyrna Beach had an average of about 200 horn flies per animal. Cattle near Pensacola average about 300 horn flies per head.

W. E. Dove (May 22): From 200 to 3,000 horn flies were observed on individual animals on the range in the lowlands.

CATTLE GRUBS (Hypoderma spp.)

Utah. G. F. Knowlton (May 20): Dots are present generally in the backs of cattle in Sanpete County and on May 22 they were found on cattle at Heber, in Wasatch County.

HORSE FLIES (Tabanidae)

Florida. W. E. Dove (May 20): Several species were observed attacking cattle and hogs near Panama City. Annoyance is rather severe. (May 23) Livestock near Fort Pierce observed to be considerably annoyed by horse flies.

SHEEP

SHEEP BOTFLY (Oestrus ovis L.)

Utah. G. F. Knowlton (May 20): Each year some sheep, usually old ewes, die of head maggots in Sanpete County.

FLEECE WORMS (Phormia sp.)

Florida. W. E. Dove (May 19): Fleece worms were observed by ranchmen on one medium wool sheep at Bonifay, and shearing has been in progress in northwestern Florida during the latter half of May.

California. A. W. Lindquist (April 28): Woolworms have been causing some infestations for the last few weeks in the upper Sacramento Valley.

SHEEP TICK (Helophagus ovinus L.)

Illinois. W. E. McCauley (May 21): Out of 18 flocks of sheep examined in as many southern and central Illinois counties, 14 were "ticky." All flocks not dipped last season were "ticky" and 2 flocks reported as having been dipped last season were also "ticky."

Utah. G. F. Knowlton (May 20): Sheep ticks are abundant on lambs generally in Sanpete County, causing a great deal of injury.

A BITING LOUSE (Trichodectes ovis L.)

Illinois. W. E. McCauley (May 21): Eighteen flocks of sheep in as many southern and central Illinois counties were examined, and 16 flocks were infested, some very severely. The damage consisted of rubbed wool prior to shearing.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

TERMITES (Isoptera)

Connecticut. M. P. Zappe (May 22): Have had about as many complaints as usual about Reticulitermes flavipes Koll.

New Jersey. J. C. Silver (May 19): R. flavipes infestations are extremely numerous in houses in northern New Jersey. Light to severe damage reported.

Pennsylvania. T. L. Guyton (April 28): Termites were found in wood in the basement of a building at Upper Darby, Delaware County, in the southeastern part of the State. (Det. by T. L. Guyton and Mrs. Bessie Roberts.) (May): On May 1 termites were found in a cellar or casement of cellar windows at Shamokin, Northumberland County, in the eastern part of the State. On May 2 they were found in the timbers of a home in Philadelphia, and on May 6 in a basement of a house in Philadelphia.

Maryland. E. N. Cory (May 5): Numerous correspondents sending in specimens and requests for help, from every section of the State.

North Carolina. C. H. Hoffmann (May 19): On May 2 numerous termite flights were reported as occurring in an area approximately 1 mile long and $\frac{1}{2}$ mile wide in north Asheville.

Ohio. E. W. Mendenhall (May 20): Termites are quite bad in certain places in Columbus and have done some damage before they were noticed.

Michigan. R. Hutson (May 21): Termites have been reported from Niles and from Greenville, where they were particularly numerous in houses on May

Tennessee. G. M. Bentley (May 23): Several swarms of R. flavipes have been reported emanating from stumps and from the sills of old buildings in different sections of the State.

L. B. Scott (May 19): Termites are reported as very abundant in the north-central part of the State, in the vicinity of Clarksville. Damage appears to be greater than in any previous year.

Missouri. L. Haseman (May 26): Reports on termites received throughout most of the month of May.

A. C. Burrill (May 7): Second swarm of R. flavipes noted on Clark Avenue, Jefferson City, Mo.

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): An outbreak of termites has been located at Sioux Falls, where they have been found doing considerable damage to buildings. Termites have destroyed two walnut trees at Gregory, in the southeastern part of the State.

Nebraska. H. D. Tate (May 17): Winged and worker specimens of R. flavipes were found in an old frame building in Madison County and sent in for identification on May 1. R. tibialis Banks was reported from Douglas County on April 16 as damaging tomato plants and carrots, and from Harlan County on April 21 as injuring vegetation, including fruit, shade, and forest trees.

Utah. G. E. Knowlton (April 21): R. tibialis was severely damaging steps, floors, and timbers in a house at Smithfield. Specimens submitted by G. E. Knowlton on April 16. (Det. by T. E. Snyder.)

California. P. Simmons (March 14): Specimens of R. tibialis forwarded by P. Simmons with his letter of March 7, with the following note: "Following a rain, several hundred adults emerged in the laboratory at Fresno." (Det. by T. E. Snyder.)

ANTS (Formicidae)

Maryland. E. N. Cory (May 5): Numerous requests for information. The ants are attacking houses and lawns.

District of Columbia. E. A. Back (April 12): Lasius interjectus Mayr was collected in a house in Washington, D. C., on April 10.

F. C. Bishopp (April 25): Paratrechina longicornis Latr. was found on a table in a restaurant at Washington, D. C., on April 24 (Det. by M. R. Smith.)

Ohio. E. W. Mendenhall (May 20): Lawn ants are doing considerable damage to lawns in Columbus and vicinity.

Illinois. W. E. McCauley (May 21): L. interjectus was mistaken for termites in many cases reported in houses in central Illinois.

Ohio. T. H. Parks (May 23): Mound-building ants active in lawns generally during April and May.

Michigan. R. Hutson (May 21): Carpenter ants, Camponotus spp., very troublesome in houses at Owosso, Shiawassee County, on April 29.

Mississippi. C. Lyle and assistants (May 24): Iridomyrmex humilis Mayr. reported from Monroe County. Pogonomyrmex badius Latr. were collected from a lawn in Harrison County on May 1. In the southwestern counties, fire ants, probably Solenopsis xyloni McCook, reported as injurious to strawberry plants by nesting near their roots. C. caryae decipiens Wheeler specimens received from Harrison County on May 13. Specimens of C. herculeanus pennsylvanicus Deg. received from Sunflower County on May 5.

Nebraska. H. D. Tate (May 17): Mound-building prairie ants, P. occidentalis Cross., reported from Hitchcock and Gosper Counties, in the southern part of the State, on May 3 and 6, respectively.

Utah. G. F. Knowlton (May): Ants annoying in houses and damaging a lawn at Logan on May 3. Reported as annoying at Farmington on May 13, and at Moroni on May 20.

CLOVER MITE (Bryobia praetiosa Koch)

Pennsylvania. E. A. Back (May 5): Specimens received from Washington Lane, Philadelphia.

New Jersey. J. C. Silver (May 8): Reported as being exceedingly numerous and very annoying in a house at Bloomfield. (Det. by F. C. Bishopp.)

E. A. Back (May 26): Specimens from houses received from Leonia on April 30 and from Rutherford on May 6.

Maryland. E. A. Back (April 24): Specimens received from Baltimore.

Indiana. J. J. Davis (May 27): Reported as annoying in houses in many parts of the State during the first half of the month.

Illinois. E. A. Back (May 6): Specimens received from Peoria.

Nebraska. H. D. Tate (May 17): Heavy infestation observed in house in Lancaster County on April 5. Specimens received from Omaha on May 5. Reported as abundant in that vicinity.

Montana. E. A. Back (May 6): Specimens received from Missoula.

ORIENTAL COCKROACH (Blatta orientalis L.)

Pennsylvania. T. L. Guyton (May 6): Reported from New Castle.

Nebraska. H. D. Tate (May 17): Specimens were submitted from Saunders County, in the eastern part of the State, on May 5.

STORED-GRAIN INSECTS (Hexapoda)

Illinois. W. P. Flint (May 20): Adults of the Indian-meal moth (Plodia interpunctella Hbn.) appeared in shelled-corn storage in central Illinois.

Michigan. R. Hutson (May 2): The saw-toothed grain beetle (Oryzaophilus surinamensis L.) appeared in swarms in houses at Rogers City.

Minnesota. A. G. Ruggles and assistants (May): The rice weevil (Sitophilus oryza L.) was infesting a bin of wheat in Lac qui Parle County, in the southwestern part of the State, on May 10. Cynaues angustus Le. is present in stored corn in Ramsey County, in the southwestern part of the State. Tribolium madens Chap. found in large numbers in a sample of grain screenings sent into Minneapolis from Ramsey County.

Iowa. G. C. Decker (May 29): C. angustus was first observed as a stored-grain pest in Iowa in 1940 and is now frequently encountered in stored corn. Live larvae and adults taken from most of the infested bins indicate that this species is comparatively hard and has a State-wide distribution. The red flour beetle (T. castaneum), the most common insect pest of stored grain in Iowa, has been taken in practically all Iowa counties. Spring observations have shown a very high winter mortality of this species; except in large storage bins and bins where insect populations were able to maintain comparatively high temperatures throughout the winter. The prevalence of live adults of the flat grain beetle (Laemophloeus minutus Oliv.) in practically all infested bins seems to brand this species as one of the most winter hardy of the common stored-grain insect pests. The foreign grain beetle (Cathartus advena Waltl.), found in stored corn throughout the State, has been greatly reduced by winter mortality, except in bins maintaining higher than average winter temperatures. The saw-toothed grain beetle (Oryzaophilus surinamensis) has been taken in stored corn in practically all counties within the southern half of the State but only scattered infestations have been recorded for northern Iowa. This species is comparatively winter hardy and live insects are easily found in bins known to be infested in 1940.

North Dakota. F. G. Butcher (May 23): Stored-grain insect pests reported as becoming more numerous. Infestation of L. minutus was observed in a storage elevator at Neche, Pembina County, in the northeastern part of the State, during the week ended May 24, but more primary grain pests were conspicuous by their absence in the infestation.

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): S. oryza, the cadelle (Tenebroides mauritanicus L.), O. surinamensis, the granary weevil (S. granarius L.), P. interpunctella, the confused flour beetle (T. confusum Duv.), C. advena, L. minutus, and C. angustus have been the most serious stored-grain pests in the State.

Nebraska. H. D. Tate (May 17): S. granarius and O. surinamensis were found in flour in Lancaster County on April 23. Specimens of S. granarius were submitted from Knox County on May 10. Reported as found in chicken feed and corn.

CASEMAKING CLOTHES MOTH (Nemapogon granella L.)

Michigan. E. A. Back (April 21): Two microlepidopterans reared from cork of wine bottle received from Detroit. Adults emerged April 11. (Det. by C. Heinrich.)

BLACK CARPET BEETLE (Attagenus piceus Oliv.)

New Jersey. J. C. Silver (May 19): Adults and larvae reported from area around Bloomfield. Infestations are very general, but little damage reported.

Pennsylvania. T. L. Guyton (April 28): Found in rugs and clothing at Charleroi, Washington County.

Iowa. C. J. Drake (May 29): Found breeding in tremendous numbers in processed cornstalks used as an insulation material in houses at Ames and Le Mars, necessitating the removal of all insulation material in the house at Ames.

South Dakota. H. C. Severin and G. I. Gilbertson (May 23): More than the usual number of inquiries received concerning bedbugs, cockroaches, and black carpet beetles.

DRUG STORE WEEVIL (Stegobium paniceum L.)

New York. R. E. Horsey (May 5): Uncommon in an herbarium at Rochester. Live adult found today with a few small larvae.

Oregon. R. L. Post (May): Specimens collected in 1940 at Dayton, Yamhill County, from dried red peppers purchased at Yakima, Wash. (Det. by W. S. Fisher.)

WHITE-MARKED SPIDER BEETLE (Ptinus fur L.)

Minnesota. A. G. Ruggles and assistants (May): Reported a few times from Ramsey County during mid- and late-April.

PTINID BEETLE (Hadrobregmus carinatus Say)

Illinois. W. E. McCauley (May 21): Very common throughout central area of State in softwood floor joists, especially in damp sections. Also found feeding in heart and sap portions of oak timbers.

A BORER (Dinoderus minutus F.)

Florida. E. A. Back (April 18): Bamboo basket received from Miami on April 18 heavily infested. (Det. by W. S. Fisher.)

CARPENTER BEE (Xylocopa virginica Drury)

District of Columbia. R. A. St. George (May 17): Active on porches and window sills during the last month and up to present time in Washington.

SPECIAL NOTE

INSECTS ON CACTUS

California. H. J. Ryan (March 17): During the course of a nursery survey at Hynes, Los Angeles County, on January 14, the cyanophyllum scale (Aspidiotus cyanophylli Sign.) was found on various succulents and cactus. Several species of cactus were found infested with snout moths (Melitara sp.).

THE MORE IMPORTANT RECORDS FOR JUNE

Very heavy populations of grasshoppers appeared during the month in southeastern Arizona, the Panhandles of Texas and Oklahoma, and southwestern Kansas. Grasshopper populations in Ohio, Indiana, and Illinois were larger than usual. Localized infestations were found in various parts of the remaining Great Plains and Rocky Mountain States.

The peak of Mormon cricket oviposition has been passed in Oregon and Washington. Extensive migrations occurred in Idaho. Development has been delayed in Nevada because of unfavorable weather. Infestations in Montana, Wyoming, and South Dakota are light, except in a few local areas.

The rose chafer was generally more abundant than usual from New England southward to Virginia and westward to Illinois and Wisconsin.

Japanese beetle adults began appearing in numbers during the third week in the month throughout the infested area.

Emergence of white-fringed beetle adults was first observed during the second week of the month in Louisiana.

Very heavy flights of army cutworm moths were observed in eastern Montana and western Nebraska.

In Ventura County, Calif., serious damage to sugar beets was occasioned by the beet armyworm.

Heavy infestations of hessian fly were reported in Ohio, Illinois, and Iowa.

In general, chinch bug was less abundant than was anticipated over practically the entire infested area. Heavy rains played an important part in this reduction.

Corn ear worm was reported as more abundant than usual in the South Atlantic States and westward to Illinois.

Surveys carried on in Illinois during the last week in May showed that the sweetclover weevil extends throughout the northern half of the State.

Comstock's mealybug females appeared about 8 days earlier than they did last year in western Virginia and eastern West Virginia.

Rather heavy infestations of European red mite were reported from Maine, Pennsylvania, and Ohio.

The peak of emergence of plum curculio larvae occurred during the first week in the month in south-central Pennsylvania. The first emergence of adults from the soil occurred during the third week in the month in Georgia. First pupation of the season occurred in the Fort Valley section nearly a week earlier than in 1940. Emergence of adults from the soil began during the second week in the month. Infestation in this region was heavier than during 1940 and the peach crop was somewhat later than usual.

Heavy build-up of purple scale in southern California was producing a serious problem on citrus, particularly in the coastal areas.

Blister beetles damaging a wide variety of crops were reported as numerous from West Virginia southward to the Gulf.

Seed-corn maggot was quite prevalent and destructive from New York, westward to Michigan. This insect was also quite destructive in parts of Utah.

Colorado potato beetle was reported as unusually abundant from New York westward to the Dakotas and Nebraska.

Tomato psyllid was reported as very abundant in parts of Montana.

The bean leaf beetle caused considerable damage from West Virginia westward to Illinois.

Serious injury to cannery peas by the pea aphid was reported from western New York across Ohio into Indiana, thence westward to Wisconsin and Minnesota. This insect was numerous on alfalfa in parts of Nebraska and Utah.

Boll weevil populations were generally above normal from South Carolina and Georgia, westward into Texas.

The cotton flea hopper was doing considerable damage in parts of Texas.

Cankerworms were defoliating trees in scattered localities in Vermont, West Virginia, North Dakota, Nebraska, and Kansas.

Forest tent caterpillar was generally abundant throughout New England and in scattered localities in Wisconsin, Nebraska, and Mississippi.

Egg-hatching season of the gypsy moth in New England was approximately 3 weeks earlier than it was last year.

Elm leaf beetle was generally prevalent in New England, southward to New York and Pennsylvania, and into Ohio.

THE MORE IMPORTANT RECORDS IN CANADA FOR MAY-JUNE

Grasshopper eggs were hatching in the Prairie Provinces during the latter part of May, but reports from Manitoba and Saskatchewan, dated May 27, indicated that the general hatch would be late, owing to prevailing cool weather. However, by mid-June grasshoppers were sufficiently numerous and active in certain areas of these Provinces and Alberta to necessitate the use of poisoned bait, and some damage to cereals and sugar beets was reported at Portage, La Prairie, Carman, and Emerson, Manitoba.

Enormous numbers of adults of the wheat stem sawfly were emerging in mid-June throughout the infested areas of Alberta and Saskatchewan. Emergence was about a week earlier than in 1940. This species increased in abundance and range in these two Provinces last year, and indications are that the 1941 outbreak will be as severe as, or worse than, that of 1940.

Overwintering adults of Say's stink bug were very abundant in extreme southern Alberta, feeding on weeds and native wild plants. Oviposition was first noted on April 28 and hatching commenced on May 20.

Wireworms are causing loss to the wheat crop in the Prairie Provinces. Considerable damage was being inflicted by them in southern and western districts of Manitoba. In Saskatchewan serious thinning of wheat on fallow occurred in areas where the soil was dry at seed level. However, considerable loss was also reported in the southeast, notwithstanding a wet spring. A survey early in June indicated 10 percent damage to summer-fallow wheat in the Saskatoon-Battleford area and 5 percent in the Battleford-Glaslyn-Bepaume district. In Alberta, wireworms were causing slight thinning of wheat in the foothills area, and some losses to sugar beets in the Jamieson-Barnwell area.

The pale western cutworm caused some crop losses locally in southern Alberta, but no cutworm damage was evident in Saskatchewan up to mid-June. In British Columbia there have been fewer reports of cutworm injury than in 1940, when an outbreak of the variegated cutworm occurred.

A major flight of June beetles (Phyllophaga anxia Lec. and P. fusca Froel.) occurred in central Ontario during May and the early part of June over an area of at least 5,000 square miles, affecting all counties between Perth and Peterborough, and many deciduous trees were severely defoliated. The last important outbreak of these insects in the region concerned occurred in 1938. A heavy flight of a third species, P. futilis Lec., occurred in the Chatham district in southwestern Ontario.

Pupae of the European corn borer were found at St. Jean, Quebec, on May 12, about 1 month earlier than in 1940. By June 14 approximately 50 percent of overwintering larvae had pupated. In the Ottawa district about 30 percent had pupated by June 11. At La Salle, in southwestern Ontario, eggs were found on June 14, the earliest date for corn borer eggs ever recorded for this Province.

Heavy flights of moths of the beet webworm were reported locally in southern areas of Saskatchewan and Alberta.

The usual reports of various degrees of crop damage by certain species of flea beetles have been received from Ontario, Manitoba, Alberta, and British Columbia.

The asparagus beetle has been taken at Mission, British Columbia. The only previous record for this province was Vancouver in 1934.

The striped cucumber beetle was reported causing widespread damage to cultivated host plants in southwestern Ontario, and heavy infestations were noted locally in New Brunswick.

Peas on Vancouver Island are seriously infested by the striped pea weevil (Sitona lineatus L.). This species was first recorded in North America at Victoria, British Columbia, in 1938. It attacks legumes generally.

Heavy infestations of the cabbage maggot, resulting in severe damage to the cabbage crop, are reported in southwestern Ontario.

The carrot rust fly, which during the last 5 years has become widespread in British Columbia, has caused from 50- to 90-percent loss of the carrot crop in the lower Fraser Valley. This pest was also found to have established itself on Vancouver Island in 1939, and is now causing serious losses to gardeners in the Victoria district.

The first pupa of the codling moth in the Annapolis Valley, Nova Scotia, was found on May 12. At Simcoe, in southern Ontario, the first moths were taken on May 27. By May 23, in the Okanagan Valley, British Columbia, the moths had been in evidence in orchards for over 2 weeks.

The eye-spotted budmoth is unusually prevalent in the Niagara district, and is a major pest this season in orchards in Norfolk County, Ontario.

The apple sawfly (Hoplocampa testudinea Klug.), which was first discovered in British Columbia at Victoria, Vancouver Island,

on June 5, 1940, occurs in the Oak Bay municipality over an area of approximately 6 square miles. The infestation of apples in this area ranges from slight to 50 percent, according to variety.

The tarnished plant bug has caused much damage to the apple crop in the Okanagan Valley, British Columbia, particularly in the Kelowna district.

A survey of orchards in the Annapolis Valley, Nova Scotia, indicates that, on the whole, the rosy apple aphid will be scarce this season.

Twig injury by the oriental fruit moth was beginning to appear in the Niagara district, Ontario, at the end of May.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

1/
 Arizona. B. M. Gaddis and assistants (June 1-7): Rather severe infestation of Melanoplus mexicanus Sauss. is reported in the Sunset-Bonita and Dos Cabezos districts in Graham and Cochise Counties, covering an estimated 2,000 to 3,000 acres of cropland and 192,000 acres of range land. Range land populations are from 10 to several hundred per square yard and in the more heavily populated spots mesquite, willow, yucca, and other plants have already been completely defoliated. M. differentialis Thos. is now the dominant species in Maricopa County. Populations range from 15 to 30 per square yard in fields and from 10 to 75 along margins and ditch banks. Damage to young cotton and alfalfa is becoming evident. Hatching of M. mexicanus is complete in Pinal, Graham, and Cochise Counties, where this species represents 75 percent of the grasshopper populations. Approximately 60 to 80 percent are adults and the remainder fourth- and fifth-instar nymphs.

C. D. Lebert (June 21): Extremely heavy population of M. mexicanus in the Sulphur Springs Valley around Willcox involving more than 300 square miles. Range is stripped and the hoppers are now working on mesquite and yucca. Populations range as high as 200 to the square yard.

1/
 New Mexico. (June 8-14): Hatching is about complete in the mid-Rio Grande Valley of central New Mexico but is only slightly over 80 percent complete in the northern counties. M. bivittatus represents about 65 percent and M. mexicanus approximately 20 percent.

1/
 Colorado. (June 8-14): Infestations in southeastern Colorado are reported to be generally light, except in a few small areas. In the eastern half of Baca County from Campo northward to the Prowers County line, a heavy infestation of M. mexicanus is present with field populations ranging from 8 to 120 per square yard and marginal populations up to 100 per square yard. Very little crop damage is in evidence even though grasshoppers are present in grain crops. M. mexicanus makes up 95 percent of the population. In the irrigated areas of southeastern Colorado, populations are comprised of M. differentialis, M. bivittatus Say, M. packardii Scudd., and M. mexicanus. Heaviest populations were noted south and east of Pueblo, Pueblo County. Population counts were as high as 25 per square yard in fields and up to 200 per square yard in margins. A few wheatfields showed as high as 20 percent marginal damage. Dryland farming areas are generally very lightly infested except small, localized areas.

1/
 Texas. (June 8-14): A survey of the crop areas in the counties of the northwestern Texas Panhandle revealed light to threatening infestations, with the heaviest populations confined for the most part to margins.

1/ Where no name is given after the State the report is by B. M. Gaddis and assistants.

Little movement of grasshoppers into crops has occurred and practically no crop damage is in evidence. Hatching of grasshoppers is practically complete. M. mexicanus is dominant and comprises 75 percent of the populations in the margins of small-grain fields. In other environments, M. mexicanus, Aecolopis turnbullii Thos., M. packardii, and M. bivittatus are about equally divided in numbers. Marginal populations average 75 per square yard in grain, while field populations average less than 5. Inspections in Ochiltree, Hansford, Roberts, and Gray Counties, in the northern Texas Panhandle, indicate M. mexicanus to be the dominant species, making up 98 percent of the infestations with populations along roadsides and field margins numbering from 100 to 200 per square yard. In the more southern counties of northwestern Texas, Brachystola magna Gir., the giant lubber grasshopper, is the dominant species, with M. differentialis next in importance. Damage by these two species was occurring to young cotton plants in localized areas. B. magna is 50 percent adult. This species which hatched on range lands has moved into adjacent cottonfields as grasses began to dry.

1/

Oklahoma. (June 8-14): Survey of Beaver, Harper, and Texas Counties, in the Oklahoma Panhandle, showed the hatch to be complete and revealed light to threatening infestations in the small-grain areas. M. mexicanus is the dominant species, comprising 60 percent of the populations in areas where grain is the chief crop. In Harper County about 15 percent of them are adults. Migrations of M. mexicanus have been general into grain from adjacent margins and idle fields; however, damage has been confined to stripping of leaves and little head damage is noticeable. Populations average about 15 per square yard in small-grainfields and 50 per square yard along field margins. Heavier infestations than were expected earlier in the season are developing with a possibility of considerable damage to crops and general, light flights of M. mexicanus from the area. Fungus disease has reduced the A. turnbullii population about 30 percent throughout the Panhandle area and is still active. In the southwestern Oklahoma counties the hatch is complete, with M. bivittatus, the dominant species, representing 35 percent of the populations, while A. turnbullii comprises 25 percent and M. mexicanus 20 percent. Adult M. bivittatus were observed June 12. Field populations seldom range higher than 10 per square yard. Light marginal damage has occurred along some cotton and alfalfa field margins. Bottom lands and other low areas have been flooded several times this spring, which apparently caused a reduction in grasshopper populations.

1/

Kansas. (June 8-14): A survey in the southwestern Kansas counties of Morton, Stanton, Hamilton, Kearney, and Grant revealed an M. mexicanus infestation covering approximately 500,000 acres. Infestation is not uniformly heavy; however, populations average 25 per square yard and in some cases as high as 100 per square yard. A large percentage of grain fields are infested, but to date there is no apparent damage except to leaves. Grasshoppers are 25 percent adults. A check to determine the eastern extent of infestation revealed that, in general, the central counties of Jewell, Mitchell, Lincoln, Ellsworth, Rice, and Stafford form the eastern boundary of the grasshopper infestation. Populations in these counties are generally light, while in the counties immediately

adjacent on the west they are considerably heavier. The dominant species in northwestern Kansas is M. bivittatus, with M. mexicanus, A. turnbullii, and M. differentialis present. Damage has been slight and fields in general are not infested. Marginal counts range up to 150 nymphs per square yard. A. turnbullii populations are being materially reduced by fungous disease.

1/
Nebraska. (June 8-14): Populations are reported to be very light in the Panhandle section of the State, but high populations are present in the southern part. Hatching of all species is complete throughout the State. A few adult M. confusus Scudd., M. mexicanus, and A. turnbullii are present. Cool and damp weather greatly retarded activity and feeding of nymphs in southeastern Nebraska throughout the week. M. mexicanus adults were found in pasture land in Buffalo County on June 12. Populations in the southwestern counties average about 8 per square yard in small-grain fields and 70 per square yard in alfalfa fields. Roadside populations range from 20 to 800 per square yard, averaging approximately 90.

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Nevada. (June 1-7): A large band of M. occidentalis Thos. is reported scattered over an area 8 miles long by 4 miles wide in the Stone Cabin area of Nye County. Ninety percent of the grasshoppers are adult.

1/
California. (June 1-7): Adult M. devastator Scudd. are appearing in the Sacramento-San Joaquin Valley area; 90 percent of the population is represented by fifth- and late fourth-instar nymphs. Hatching is beginning in Placer County, and in a few areas, high populations are reported.

Ohio. T. H. Parks (June 25): Grasshoppers have increased since last year. First reports received from Greene and Hamilton Counties. Reported from points near Columbus, where young have hatched in large numbers and are entering garden, potato, and soybean plantings.

Indiana. J. J. Davis (June 23): Grasshoppers present in sufficient numbers in alfalfa and clover in northwestern Indiana to cause serious damage to corn when they leave their present feeding grounds.

L. F. Steiner (June 21): Very heavy populations in orchards at Vincennes injured by grasshoppers last year.

1/
Illinois. (May 25-31): Rather heavy but localized infestation was reported in Grundy County in an area south of Gardner and east of Dwight. Grasshoppers cover an area approximately 1 mile wide and 4 miles long.

Wisconsin. E. L. Chambers (June): M. bivittatus very abundant on several farms in Waupaca County, causing complete loss to untreated alfalfa and small grains.

B. M. Gaddis (June 1-7): Rains and cool weather greatly retarded hatching. In many northeastern counties of the State, the hatch of M. bivittatus and M. femur-rubrum was just beginning at the close of May.

Populations were very light and mostly along alfalfa field margins. Dominant species in the east-central portion of the State is M. bivittatus, with a few M. femur-rubrum present. Marginal populations as high as 50 to 75 per square yard were noted during the last week.

1/

Minnesota. (June 8-14): Heavy rains occurred throughout the northwestern portion of the State and grasshoppers were somewhat retarded in the rate of development during the week. The heavy M. bivittatus populations in this area are now 25 percent third instar and 70 percent fourth. There apparently was no large reduction in nymphal populations because of the heavy rains. Dissosteira carolina L. was reported hatching in considerable numbers on June 13. In southwestern Minnesota the hatch of M. differentialis, the dominant species, is approximately 60 percent complete, while that of M. bivittatus is about 90 percent complete. Hatching of M. femur-rubrum is just beginning.

1/

North Dakota. (June 8-14): Populations in northeastern North Dakota continued to develop; however, the rate of development was somewhat retarded. The major M. bivittatus populations in this area are now 25 percent third- and 70 percent fourth-instar nymphs. In northwestern North Dakota hatching and nymphal development also was retarded and, for the area as a whole, the hatch of M. mexicanus is not over 25 percent complete while M. bivittatus is approximately 45 percent complete.

J. A. Munro (June 23): Populations of 40 to 50 grasshoppers per square yard were commonly observed along roadsides and in pasture lands in Pembina and Walsh Counties, more than 80 percent being M. bivittatus. Less than 1 percent had reached the adult stage on June 21. Hoppers were scarce at Langdon.

1/

South Dakota. (June 8-14): Cool, cloudy, and rainy weather prevailed the entire week throughout much of South Dakota and nymphs developed but little. In the counties of central South Dakota, east of the Missouri River, hatching is practically complete, with the exception of possibly a few M. differentialis. Most M. mexicanus and M. bivittatus are in the fourth and fifth instars. M. differentialis nymphs are mainly second and third instars. Economic populations are very spotted. Grasshoppers have moved into small-grain fields to some extent; however, the heavier concentrations remain along field margins. In the more severely infested areas, marginal populations average about 150 per square yard; M. bivittatus is the dominant species.

1/

Wyoming. (June 8-14): A threatening infestation is reported 13 miles north of Riverton in Fremont County, covering an area approximately 10 miles long and 3 miles wide. M. bivittatus is the dominant species. Infestations are confined largely to field margins and very little crop damage has occurred to date. Threatening infestations also are present north of Worland, in Washakie County.

B. T. Snipes (June 21): M. bivittatus and M. femur-rubrum were present in considerable numbers in Sheridan, Big Horn, Park, Hot Springs, and Washakie Counties, and in parts of Fremont County. In Park County they range from 5 to 150 per square yard in margins and from 1 to 150

in fields, being first to fourth instars and hatching being about 50 percent complete. Population greatly reduced in some parts of Big Horn Basin, owing to weather conditions.

Missouri. L. Haseman (June 25): Grasshopper damage reported from Osage, Camden, Gasconade, Franklin, Pulaski, Madison, Laclede, Texas, Wright, Dent, Jefferson, and Crawford Counties. Over 90 percent of the injury is being done by M. bivittatus. M. mexicanus adults were observed first at Columbia on June 4.

Montana. H. B. Mills (June 25): Grasshoppers, M. mexicanus and M. bivittatus were noted in a very heavily infested grain area in Pondera County. Few hoppers present in other parts of the State.

B. M. Gaddis (June 8-14): Hatching of M. mexicanus and M. bivittatus is estimated as 75 to 95 percent complete in the south-central portion of the State. Heaviest infestation to date has been found in western Big Horn County, where populations range from 25 to 90 nymphs per square yard. Rather severe infestations are also present in Treasure, Wheatland and eastern Yellowstone Counties. Dry, warm weather which prevailed throughout the counties of northeastern Montana, was favorable to grasshopper development. Light hatching has occurred and it is estimated that the hatch will be complete in a week or 10 days if weather conditions remain favorable. M. mexicanus is the dominant species in northeastern Montana, comprising approximately 90 percent of the grasshopper populations. In north-central Montana, moderate infestations are present in Pondera and Toole Counties, while in Hill and Chouteau Counties they are very light and spotted.

1/
Utah. (June 1-7): Weather conditions during the week were generally unfavorable for grasshopper development throughout the State. In the central and south-central portions of Utah, grasshoppers are becoming generally distributed through alfalfa and grain crops. Heavy localized infestations were reported in areas in Juab, Beaver, Piute, Sevier, and Millard Counties. Field populations average 25 grasshoppers per square yard and, along crop margins and on idle land, average 100 per square yard. Hatching is estimated to be 70 percent complete in most crop areas, with M. mexicanus, M. bivittatus, and M. packardii comprising the dominant species, in the order named. Rapid hatching of Camula pellucida Scudd. occurred during the last 2 weeks in the meadowland areas of Sanpete County. Populations up to 500 nymphs per square yard are present in meadowlands and along canal banks. In the north-central counties of Salt Lake and Davis the most heavily infested areas are reported on benchlands, with M. mexicanus comprising 80 percent of the populations. Crop injury caused by feeding is becoming noticeable throughout the infested areas of the State. Young corn, barley, and alfalfa crops have been severely damaged in several areas. (June 8-14): Throughout north-central Utah, M. mexicanus is the dominant species. Threatening infestations are reported in several localities in Weber, Utah, and Morgan Counties, where populations up to 100 per square yard are present along crop margins and on idle land adjacent to crops. The severely infested areas of these counties are, with few exceptions, restricted to benchland or foothill farming

districts. Considerable marginal damage is occurring in alfalfa and grain in Weber County. Populations in Rich and Summit Counties are very low. Rather severe infestations were found in several localities in Box Elder County.

^{1/}
Idaho. (June 8-14): Hatching of the economic species of grasshoppers, except for C. pellucida, is complete in the eastern counties; eggs of this species have not begun to hatch. Populations are not heavy.

MORMON CRICKET (Anabrus simplex Hald.)

^{1/}
South Dakota. (June 1-7): Mormon crickets in Lyman, Jones, and Mellette Counties are scattering and little migration is evident. Most crickets are now in the sixth- and seventh-instar and adult stages. In an area between Presho and Oacoma in Lyman County, considerable numbers of crickets are present in small-grain fields, particularly along margins where counts range as high as 50 to 60 per square yard.

Nebraska. H. D. Tate (June 20): Some third- and fourth-instar crickets were found in Scotts Bluff County on June 4.

^{1/}
Montana. (May 25-31): Increased migrations occurred in the Sioux Pass area of Big Horn County during the week. Populations in the Black Butte area in Chouteau County range from 2 to 25 per square yard, with approximately 75 percent in the 5th instar. In Beaverhead County crickets in the lower altitudes range from the third to sixth instars, with most in the fourth, while in the higher areas they range from first to third, and unhatched eggs are still present. Populations range from 100 to 300 crickets per square yard. (June 8-14): Migrations have increased in Yellowstone County following the recent rains and some infiltration into croplands has occurred; however, there has been little damage to crops. Adults are now appearing in the Pryor and Fly Creek areas.

^{1/}
Idaho. (June 8-14): Cricket migrations were occurring generally during the week throughout the eastern part of the State. In Jefferson and Madison Counties, they occurred simultaneously in three separate areas originating in the area roughly bounded by the towns of Hamer, Roberts, and Rexburg. Cricket migrations in Clark and Fremont Counties also were quite extensive. The range of development of Mormon crickets in the eastern part of the State is from the sixth instar to the adult stage, with 80 percent adult; approximately 5 percent of the females have developed eggs. Populations in migrating bands ranged from 5 to 50 per square yard.

Utah. D. D. Jorgensen (June): Mormon crickets occur in an area of several miles in southeastern Tooele County, where the most heavily infested areas are in the Onaqui Range, Judd Creek, Government Creek, Simpson Springs, and northeastern Juab County, in the mountains just south of Eureka. Bands range in size from 2 to 5 acres. One band at Tallyway Canyon, Tooele County, was $3\frac{3}{4}$ mile long and more than a mile wide. By June 20, 10 percent were adult, but no mating had been observed. No severe crop injury has occurred. Range feeding has been common.

Wyoming. B. T. Snipes (June 21): Abundant in Crook, Sheridan, and Hot Springs Counties (at least 20,000 acres of crickets in Owl Creek Hills); one band in southern part of Washakie County; scattered crickets in Goshen.

1/
Nevada. (June 1-7): Adults are appearing in the McDermitt area of Humboldt County and in Buffalo Valley in Lander County. Hatching is still occurring in many of the higher areas and in some areas there are many fertile eggs still present. The most threatening infestation is in the area south of Elko extending west through Ten Mile Canyon and south to within a few miles of Jiggs. (June 8-14): Migrations from the higher altitudes toward the lower elevations have begun. Adult crickets have appeared in several of the infested areas and in some bands make up from 10 to 60 percent of the populations. Cricket bands have been noted ranging in development from 1st instar to adults and in some of the higher areas, hatching is still occurring.

1/
Washington. (May 25-31): Owing to the cool and rainy weather in Franklin County, cricket migrations during the week were not extensive. Increased migrations were noted in Yakima and Klickitat Counties.

1/
Oregon. (June 8-14): Migrations increased considerably during the week on the Warm Springs Indian Reservation. Oviposition was noted among the Mormon crickets on June 10 and continued on an increased scale throughout the remainder of the week. In Baker County, approximately 50 percent of the crickets are now in the adult stage. Migrations increased in Gilliam and Sherman Counties and in several areas the crickets have entered wheatfields, causing slight damage.

ROSE CHAFER (Macrodactylus subspinosus F.)

Massachusetts. A. I. Bourne (June 23): Reported as generally less abundant than usual, but very abundant in limited areas and causing an unusual amount of damage to roses and peonies.

New York. R. E. Horsey (June 16): More numerous than last year in the southern part of Rochester, feeding on roses, peonies, and other blossoms, including those of the Kousa dogwood.

N. Y. State Coll. Agr. News Letter (June): In the western part of the State the rose chafer became abundant in Cayuga County, where they fed on muck vegetables (as many as 100 to a single four-leaved plant), in Orleans County on peaches, and in Monroe and Chautauqua Counties where their feeding on beans closely resembles that of the bean beetle.

Pennsylvania. H. N. Worthley (June 4): First adults seen on June 3 at State College, mating and feeding in grape clusters.

Virginia. L. A. Hetrick (June 7): Reported as doing serious damage in gardens, especially in raspberry bushes.

A. M. Woodside (June 11): Feeding on fruit of isolated sour cherry trees at Timberville, causing moderate damage.

S. B. Fenne (June 18): Severely damaging rose, cherry, iris, peony, grape, and apple at Blacksburg.

West Virginia. F. W. Craig (June 18): Unusually abundant in Jackson, Kanawha, and Raleigh Counties.

Tennessee. G. M. Bentley (June 25): On May 24 and 28 the rose chafers were eating partly grown apples and peaches, causing complete destruction of fruit at Cosby, in Cocke County, Byrdstown, in Pickett County, and Shelbyville, in Bedford County.

Indiana. J. J. Davis (June 23): Reported as unusually abundant in the northern third of the State from June 7 to 14.

Illinois. C. L. Metcalf (June 26): Reported as doing serious damage to roses, peonies, viburnum, and geraniums in the Chicago area in early June.

Wisconsin. E. L. Chambers (June 28): Very abundant and doing damage in Jackson, Monroe, Columbia, and Waukesha Counties.

JAPANESE BEETLE (Popillia japonica Newm.)

Pennsylvania. T. L. Guyton (June 24): Grubs somewhat numerous in lawn at Freeport.

G. B. Slesman (June 20): First beetles were picked up on apples and roses near Swarthmore and at Norwood.

B. F. Coon (June 21): Two adults were captured in a trap on June 6 and one on June 9 at Lancaster. On June 19 a few adults were seen on potato but heavy emergence has not yet begun.

Delaware. L. A. Stearns (June 18): First adults observed on peach at Camden and on apple at Bridgeville.

Virginia. L. A. Hetrick (June 20): Adults abundant in vicinity of Cape Charles, on the Eastern Shore, but apparently emergence had not started farther north in Accomac County.

R. A. St. George (June 24): First beetle noted on privet hedge near East Falls Church, Arlington County.

H. G. Walker and L. D. Anderson (June 27): Much more abundant than last year in the Norfolk area on roses, grapes, soybeans, and sweet corn. Of the 1,580 beetles caught in 24 traps at the Virginia Truck Experiment Station last year, only 308 were caught by June 27, whereas 2,610 were caught in the same number of traps this year.

MAY BEETLES (Phyllophaga spp.)

Maine. A. E. Brower (May-June): Comparatively few beetles flew to light.

Ohio. T. H. Parks (June 25): White grubs have caused no defoliation to forest and shade trees, and no injury has been observed on shade-tree foliage.

Illinois. W. P. Flint (June 23): Light-trap catches at Urbana have shown about four times as many beetles taken in traps this year as in 1940.

Nebraska. H. D. Tate (May 20): June beetles, P. crassissima Blanch., were flying around lights in Buffalo County today.

WHITE-FRINGED BEETLE (Pantomorus leucoloma Boh.)

General. B. M. Gaddis (June 12): First field-collected adult beetles of the season from Mobile, Ala., and Laurel and Maxie, Miss., were reported during the week ended June 12. In Mobile the known infestation in the Magazine district was found to extend two blocks farther eastward and southward. In the Monroeville, Ala., area a field of sweetpotatoes at Tunnel Springs had been destroyed by larvae, was replanted, and the second plants were being killed by the larvae. A garden near Peterman, Ala., also showed larval damage. In the Floral area, near Svea, Fla., adult beetles were easily found on several properties. In New Orleans, La., emergence appeared to increase somewhat near the close of the week and high populations of beetles were found in one location along Hibernia Avenue.

WIREWORMS (Elateridae)

Maine. F. H. Lathrop (June 13): Eastern field wireworms (Limonius agonus Sa) were destructive to planted corn seed in Franklin County.

New York. N. Y. State Coll. Agr. News Letter (June 9): Reports of damage by L. agonus were received from Long Island, and from Oneida and Erie Counties.

South Carolina. W. C. Nettles and F. Sherman (June 24): Fewer sand wireworms, Horistonotus uhlerii Horn, present than in 1940.

North Dakota. H. S. Telford (June 23): Prairie grain wireworm (Iudius aereipennis Kby.) has severely infested small grains at McCanna and Finley.

Georgia. P. M. Gilmer, et al. (June 14): Rather severe cotton-square damage reported from Turner County.

Iowa. H. E. Jaques (June): Light to moderate infestations in scattered counties throughout the State.

Utah. G. F. Knowlton (May 27): Wireworm injury severe in field corn, beans, and peas in home gardens at La Point. (June 2): Causing some injury to peas and lima beans in a few fields at Springville and Mapleton. (June 11): Damaging young corn in spots at Murray, as many as 50 being found around some hills at germination time.

California. M. W. Stone (June 17): Aeoleus livens Lec. is responsible for considerable damage to lima beans in an 80-acre planting near Saticoy, Ventura County. Siftings made in the rows on June 17 showed equal numbers of larvae of A. livens and Limonius californicus Mann.

ARMY CUTWORM (Chorizagrotis auxiliaris Grote)

Nebraska. H. D. Tate (June 20): Adult specimens received from Hall County on June 2. Reported as numerous in houses in Redwillow and Phelps Counties on May 22. Reported as common in homes, stores, and offices in Buffalo, Lincoln, Keith, Scotts Bluff, and Cherry Counties from June 3 to 5, and as very abundant in Scotts Bluff County on June 16.

Montana. H. B. Mills (June): Large numbers of army cutworm moths present generally in the eastern part of the State during the month of June.

Utah. G. F. Knowlton (May 30): Injury is decreasing generally. Moths were in flight and collected at Price in Carbon County during the last week.

VARIEGATED CUTWORM (Peridroma margaritosa Haw.)

Nebraska. H. D. Tate (June 20): Specimens were received from Franklin, Harlan, Furnas, and Douglas Counties on May 21 and 29 and June 6 and 13, respectively. Large numbers were observed on alfalfa in Lancaster County on June 9. On May 29 larvae were noted eating leaves of white clover in a blue grass-clover lawn in the same county.

California. L. G. Jones (May 24): Cutworms are very abundant on alfalfa in all fields examined in the Antelope Valley, and considerable leaf injury was observed.

GLASSY CUTWORM (Sidemia devastatrix Brace)

Utah. G. F. Knowlton (June 6): Cutworms caused moderate to serious damage to corn at Lapoint and to newly set cabbage at Morgan and Salina; also in Utah County and in the Milford Valley area between May 20 and June 6.

BEEF ARMYWORM (Laphygma exigua Hbn.)

California. M.W. Stone (June 6): Severe damage to late-planted beets necessitated control measures in Ventura County for first time in 10 years. Portions of fields wiped out completely and stand reduced from 20 to 30 percent in over 800 acres. Agrotis ypsilon Rott. was also present. (Det. by C. Heinrich.)

PAINTED LADY (Vanessa cardui L.)

Wisconsin. C. L. Fluke (June 20): V. cardui was extremely numerous on Canada thistle in Manitowoc County.

North Dakota. J. A. Munro (June 23): V. cardui and V. atalanta L. were unusually abundant throughout the State.

Utah. G. F. Knowlton (June): Large migration of V. cardui observed the last of May in Utah, Duchesne, Carbon, and Emery Counties. Larvae have attacked peas, thistle, round-leaf mallow, sunflowers, and cockle burs. On June 14 the butterflies were abundant in many

northern localities, and in Washington County in the southwestern part of the State.

WEBWORMS (Loxostege spp.)

- Nebraska. H. D. Tate (June 20): Adults of alfalfa webworm were observed in alfalfa fields in Hitchcock and Redwillow Counties and around store windows in Buffalo and Phelps Counties on May 22. Also reported as numerous in Cherry, Dawes, Box Butte, Morrill, and Scotts Bluff Counties on June 5.
- Texas. L. W. Noble (June 21): Garden webworm has caused light damage to cotton in a few fields at Presidio, Presidio County. Noted on pigweed, in fairly large populations, distributed over a rather large area.
- Minnesota. M. W. Wing (May 20-June 19): One small infestation of sugar beet webworm on roadside woods in low swale in Big Stone County.
- Montana. H. B. Mills (June 23): Very heavy moth flight of beet webworm this spring. Damage starting on beets in Pondera County and the Yellowstone Valley. Attacking many crops.

WHITE-LINED SPHINX (Sphinx lineata F.)

- Utah. G. F. Knowlton, et al. (May 28): Larvae abundant on range land in area from Woodside to Green River, and about 5 miles west of Green River where much Russian-thistle and various range plants have been stripped along highway. Three to six larvae per square yard, of all sizes, were present.

SAY'S STINKBUG (Chlorochroa sayi Stal)

- Montana. D. J. Pletsch (June 20): Feeding by this bug is causing a wilting of the terminal growth of potato plants in the vicinity of Billings, Yellowstone County, as many as 10 adult pentatomids having been noted on 1 plant. Affected plants are not abundant but very noticeable.

H. B. Mills (June): Moderately abundant in eastern and central Montana.

CEREAL AND FORAGE - CROP INSECTS

WHEAT AND OTHER SMALL GRAINS

HESSIAN FLY (Phytophaga destructor Say)

- Ohio. T. H. Parks (June 25): Greatly increased over last year, although no serious damage expected.
- Illinois. W. P. Flint (June 23): Spring brood has been very severe, with heavy infestations developing in many of the central and south-central counties. Heavy breakage of winter wheat in south-central section of the State.

J. H. Bigger (June 26): Heavy infestations by spring generation in southern half of State.

Iowa. C. J. Drake (June 5): Moderate to fairly heavy in every county where winter wheat is grown. Rather heavy infestation in many wheatfields in the western part of the State. Large percentage of fields in Woodbury, Monona, Harrison, Crawford, Shelby, and Guthrie Counties showed injury and flaxseeds were not difficult to find. Infestation was fairly heavy in the eastern part of the State and in most of the southern counties. Present infestation is barely below the point of serious commercial damage and should be considered fairly heavy and on the verge of a serious outbreak.

Nebraska. H. D. Tate (June 11): Wheat stems infested with flaxseeds were received from Dodge County today.

CHINCH BUGS (Blissus leucopterus Say)

South Carolina. W. C. Nettles and F. Sherman (June 24): Fewer complaints than for last several years. Less corn has been planted next to small grain.

Mississippi. C. Lyle, et al. (June 25): Specimens on corn received from Clarke County on May 29 and from Humphreys County on June 14. Reported as damaging corn in Tunica County on June 16.

Illinois. W. P. Flint (June 23): Rains during the past month have considerably reduced the infestation.

J. H. Bigger (June 26): Abundant in spotted areas. Damage confined to thin stands of wheat.

Iowa. C. J. Drake (June 23): Infestation reduced by heavy rains of several days ago. Large percentage of first- and second-instar bugs were destroyed. Large numbers of newly-hatched nymphs have appeared in the fields during the last week. In the western part of the State some barley and wheatfields were examined where the population ran as high as 1 to 300 or 400 per linear foot. These fields were the exception rather than the rule, but a considerable number of fields examined showed populations running from a few to 15 or 20 young bugs per linear foot of drill row. Hatching was not complete.

H. E. Jaques (June): Infestations were light to moderate in a few counties in the southeastern section of the State, and light to heavy in the southwestern and central section.

Nebraska. B. M. Gaddis (June 16): Fields examined in southern Lancaster, most of Gage, and the western part of Johnson and Pawnee Counties showed a marked decrease in adult and nymphal populations. Some fungus was observed. The last 3 counties were in the heart of the flood area in southeastern Nebraska. Most of the nymphs were second and third instar. Just south of Lincoln the adult population had not been decreased and nymphal counts were the same as 10 days previous. In the barley fields of this latter area first-instar nymphs were the most prevalent. In a few counts made in southern Cass County

adults did not run over 5 to the linear foot, but nymphs were as high as 50. Potential migration threat reported in the eastern half of Saunders County on June 20.

Kansas. L. W. Hepner (June 18): Very few heavily infested fields in Cherokee County. The northwestern and north-central parts of Labette County seem to have the heaviest infestation. Elk County is in the center of the most heavily infested area of the State. All parts of the county are about equally infested. In Wilson and Crawford Counties harvest is well along and some barriers have been constructed. Control measures are necessary in Neosho County. In Butler County infestation is uniform with threatening populations.

Missouri. P. C. Stone (June 25): No large general State-wide flights from winter hibernating quarters to small grains this spring. In 1 or more of 20 counties small sporadic flights were recorded every 2 or 3 days from April 13 to May 13, and also on May 27. The State, as a whole, was rather lightly infested with the first brood. Most severe infestations were generally found in the winter-killed wheatfields in the northern and west-central parts of the State. Few bugs matured in vigorous fields of wheat and scarcely a field of oats was infested. Continued scattered and State-wide rains came too early in April and too late in May to bring about any material reduction of the first brood of bugs.

Oklahoma. H. T. Rainwater (June 20): Practically all of the wheat has been harvested or is fully ripened in the area most heavily infested with chinch bugs. Corn is from 6 inches to 6 feet high, so no injurious migrations are expected.

R. G. Dahms (June 22): Owing to hardbeating rains on June 6, many small nymphs were killed, and during May and first half of June a fungus killed many bugs. Most of the bugs are in the fourth and fifth instars, with a few first-generation adults.

WHEAT JOINTWORM (Harmolita tritici Fitch)

Ohio. T. H. Parks (June 25): Wheat jointworm has increased since last year and fields have been found where between 30 and 40 percent of the straws were carrying these galls. Lodging of straws is not prevalent and no serious damage is expected.

Illinois. J. H. Bigger (June 26): Spotted areas are present throughout central and southern Illinois, with breakage amounting to from 5 to 10 percent.

CORN ROOTWORMS (Diabrotica spp.)

South Carolina. W. C. Nettles (June 7): Specimens of Diabrotica sp. which caused starvation symptoms in barley were submitted. First time it has been noted in the State. A 40-acre field was involved, in which some spots several yards square would be affected and other spots equally large would be unaffected. Collection was made on May 10. (Det. by W. H. Anderson.) (June 24): The southern corn rootworm, (D. duodecimpunctata F.) is above average in injury.

Illinois. F. J. Bigger (June 26): A field near Elgin in northeastern Illinois was observed about June 10, where adults of the southern corn rootworm had eaten into the stems of about 5 percent of the plants so that central part of plant was killed; plants with lighter damage recovering.

Iowa. H. E. Jaques (June): The northern corn rootworm (D. longicornis Say) was found in Monona, Pocahontas, and Cedar Counties.

A MIRID (Thyrillus pacificus Uhler)

Idaho. W. E. Shull (June 20): Attacking winter and spring wheat and oats at Lewiston and American Falls, and causing temporary damage. Moving in from native grasses to margins of fields.

CORN

ARMYWORM (Cirphis unipuncta Haw.)

Iowa. H. E. Jaques (June): Light infestation in Cedar and Davis Counties, in the southeastern section of the State, and in Ida and Monona Counties in the west-central section; heavy infestation in Pottawattamie County in the southwestern section of the State.

Illinois. J. H. Bigger (June 26): Few small outbreaks occurred in central Illinois the last of May and first of June.

Maine. A. E. Brower (May-June): Unusually abundant at lights.

F. E. Lathrop (June 13): Moths were taken in quantities at light trap in Penobscot County during May. About 80 percent were gravid females.

Kentucky. W. A. Price (June 24): Spring armyworms did some damage during May to corn and small grain in several small areas.

Nebraska. H. D. Tate (June 20): Caterpillars sent in from Colfax County on June 12. Observed on wheat and oats in Butler County on June 10; also found on wheat in Seward County on June 12.

CORN EAR WORM (Heliothis armigera Hbn.)

Virginia. H. G. Walker and L. D. Anderson (June 27): Appear to be more abundant in sweetcorn in the Norfolk district than for several years. Many nearly full-grown larvae have been found feeding on the plants before they began tasseling.

South Carolina. O. L. Cartwright (June 6): Attacking corn from 1 to 2 feet high in top leaves or throat. Considerable injury observed in Florence, Lee, and Barnwell Counties.

Illinois. R. A. Blanchard, et al. (June 18): More abundant than usual in sweet corn in the market garden section near East Saint Louis.

Corn silking was 95 to 100 percent infested by June 2, and on June 16 there were from 1 to 5 larvae per ear. About 50 percent of the ears will be marketable.

Missouri. L. Haseman (June 25): On June 16, second, third, and fourth instars were observed feeding in the buds and tassels of sweet and pop corn. In one case 30 percent of the buds were attacked in pop corn.

Utah. G. F. Knowlton (June 4): Adults are abundant at Milford.

EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)

Connecticut. N. Turner (June 23): After the earliest pupation and emergence on record, there is apparently a lighter infestation than usual in corn. Moths are still present, and this late infestation may build up a larger population.

New York. N. Y. State Coll. Agr. News Letter (May 26): In the Hudson Valley emergence had reached the 30-percent level on May 24 and eggs were being laid on the earlier plantings of sweet corn. In one field eggs were already present on that date to the extent of 50 masses per 100 plants. Found the first borers in Rockland County on May 29. (June 9): Some fields showed as high as an average of 1 egg mass per plant in Columbia County in eastern New York on June 6, but most fields showed about 12 masses per 100 plants with egg laying continuing. (June 23): In western New York, 79 percent of the borers had pupated by June 20 in Monroe County. No moth emergence was observed.

Virginia. H. G. Walker and L. D. Anderson (June 27): The European corn borer is not so abundant in potatoes in Princess Anne County as it was last year. The hot dry spring seemed to prolong emergence, so that moths from the overwintering generation of borers were still present in the field when moths of the new generation began emerging from potatoes.

SOUTHERN CORNSTALK BORER (Diatraea crambidoides Grote)

Virginia. H. G. Walker and L. D. Anderson (June 27): Larvae of the southern cornstalk borer are rather abundant in several fields of early sweet corn in Norfolk and Princess Anne Counties.

South Carolina. O. L. Cartwright (June 5): Severely injured sections of two cornfields in Florence County.

Georgia. T. L. Bissell (June 13): At Experiment, corn which is from 11 to 26 inches tall is rather heavily infested. Some stalks were found with youngest leaf dead, other leaves slightly ragged, and large burrows in the base of the stalk. Such stalks have from one to three larvae, and one pupa was found.

FALL ARMYWORM (Laphygma frugiperda A. & S.)

Mississippi. T. F. McGehee (June 19): Found feeding in the bud of corn in Hancock County today.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus Zell.)

South Carolina. O. L. Cartwright (June 5): Sections of two cornfields in Florence County were damaged.

BILLBUGS (Calendra spp.)

South Carolina. O. L. Cartwright (June 5): Several fields of corn were rather heavily infested by C. callosa Oliv. and C. maidis Chitt. in Florence and Lee Counties.

Mississippi. C. Lyle (June 25): Specimens of C. callosa were received from Panola County on May 29 where they were taken from corn, and adults (probably C. cariosa Oliv.) were sent in from Harrison County on June 19.

Iowa. H. E. Jaques (June): Light infestations in Hardin County in the central part of the State, and in Henry and Davis Counties in the southeastern section.

SOD WEBWORMS (Crambus spp.)

Ohio. T. H. Parks (June 25): Serious injury occurred in a few isolated fields of central Ohio late in May, necessitating the replanting of some corn.

Iowa. H. E. Jaques (June): Light infestation in Floyd County and moderate infestation in Jones County.

Minnesota. M. W. Wing (May 20-June 19): Severely damaging parts of cornfields in Blue Earth County.

A SEED CORN BEETLE (Agonoderus sp.)

Wisconsin. C. L. Fluke (June 20): Cool, rainy weather of June 2 to 14 occurred just after planting and has given rise to attacks by corn seed ground beetles (Agonoderus sp.), especially in southern counties.

ALFALFA AND CLOVER

ALFALFA WEEVIL (Hypera postica Gyll.)

Nebraska. H. D. Tate (June 3): Adults were collected today from sweepings in an alfalfa field in Scotts Bluff County on June 3.

Wyoming. B. T. Snipes (June 21): Two fields of alfalfa at Basin were heavily attacked, one so badly that first hay crop was ruined and field is being plowed under. About 5 to 10 percent damage in second field.

Utah. G. F. Knowlton, et al. (May and June): Moderate to serious damage on alfalfa has occurred at Milford, Green River, Verdure, Skull Valley, Smithfield, and Murray.

CLOVER LEAF WEEVIL (Hypera punctata F.)

Iowa. H. E. Jaques (June): Light infestation in Davis County, in the southern part of the State.

Idaho. W. E. Shull (June 20): Always present on which Dutch clover but never serious until this spring at Caldosac, Nez Perce County, and Aberdeen, Bingham County.

Utah. G. F. Knowlton (June 20): A few adults were picked up among red clover and alfalfa at Pleasant Grove.

A WEEVIL (Hypera rumicis L.)

New York. N. Y. State Coll. Agr. News Letter (May 26): Small snout weevils were received from Nassau and Sullivan Counties during the past week. Found in very large numbers and reported as feeding destructively on sour grass in Nassau County. Introduced species formerly known only in Westchester County. (Det. by H. Dietrich.) (June 2): Slugs, pupae, and adults were found in destructive numbers on sour grass cultivated for seed near Farmingdale.

SWEETCLOVER WEEVIL (Sitona cylindricollis Fahr.)

Illinois. J. E. Bigger (June 26): Survey made May 26-28 showed that the range of the sweetclover weevil extended throughout the north half of the State. Abundant generally in northern third and killing out spring seedlings. Spotted severely infested areas near southern limits area. Sweetclover only plant attacked.

CLOVER ROOT CURCULIO (Sitona hispidula F.)

Utah. G. F. Knowlton (June 5): Abundant in one field of alfalfa at Ogden. Present throughout northern Utah on alfalfa but less abundant generally than last season.

GRAPE COLASPIS (Colaspis brunnea F.)

Illinois. W. P. Flint (June 23): Extensive injury to corn and soybeans on clover or soybean sod. First adult was noted in field on June 13 in central Illinois.

Missouri. L. Haseman (June 25): Beetle present in great numbers in lespedeza plantings in central Missouri.

CLOVER HAY WORM (Hypsopygia costalis F.)

Missouri. L. Haseman (June 25): Numerous moths appeared in central Missouri and were taken in codling moth bait jars during the last 10 days.

ZEBRA CATERPILLAR (Ceramica picta Harr.)

Utah. G. F. Knowlton (June): Larvae are seriously injuring alfalfa north of Honeyville, in Box Elder County.

THRIPS (Frankliniella spp.)

California. L. G. Jones (May 24): Damage to hay alfalfa in the Antelope Valley by F. occidentalis Perg. and F. moultoni Hood averaged well above 10 percent on all the second cutting, and the seed crop on small acreages was completely destroyed.

PLANT BUGS (Lygus spp.)

Arizona. W. A. Stevenson (June 14): Population of Lygus sp. is still on the increase in the Santa Cruz Valley, especially in alfalfa. A maximum of 163 specimens were taken per 100 net strokes, which is very high. Present also on Atriplex and Russian-thistle, which is spreading rapidly in this valley.

Nebraska. H. D. Tate (June 20): Specimens sent in from a garden in Harlan County on June 3 were identified as L. elisus Van D.

Utah. G. F. Knowlton (May 31): L. elisus was moderately abundant on potatoes and alfalfa at Plain City. (June 12): L. elisus and L. elisus hesperus Knight are abundant on canning peas in several fields adjoining recently cut alfalfa at Pleasant Grove, American Fork, Smithfield, Pleasant View, Orem, Payson, and Spanish Fork. (June 24): L. hesperus is damaging potato foliage adjoining recently cut alfalfa at Garland.

CLOVER MITE (Bryobia praetiosa Koch)

Virginia. S. B. Fenne (June 12): Every red clover leaf in Augusta County infested with mites; some curling and burning of the leaf edges. Damage light.

Utah. G. F. Knowlton (June 20): Injuring red clover at Pleasant Grove.

COWPEAS

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

Georgia. T. L. Bissell (June 11): Adults have been emerging from hibernation rather regularly since April 16. Large numbers were found puncturing stems of small cowpea plants and killing them. As many as 10 were found by 1 plant, most of them at the ground level, and the stems were riddled with holes. Leaves were also punctured. Stem injury has not been observed before.

COWPEA APHID (Aphis medicaginis Koch)

Georgia. T. L. Bissell (June 25): Heavily infested the stems, leaves, flowers, and pods of a few cowpea plants at Plains, Sumter County, on June 20. One leaf of a peanut plant nearby was also infested.

TIMOTHY

A MITE (Epitrimerus hystrix Nal.)

New Jersey. F. W. Poos (May 17): Specimens collected at Moorestown on May 14. Timothy badly infested with mites which are causing serious damage. (Det. by H.H. Keifer.)

F R U I T I N S E C T S

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

New York. D. W. Hamilton (June 23): Captures of adults in bait traps continued heavy through June 12 at Poughkeepsie, eastern New York. Since that time captures have lessened, although moths are still abundant in orchards. Larval entrances on untreated trees were moderately abundant from May 26 to June 7, and very abundant from June 7 to June 21.

N. Y. State Coll. Agr. News Letter (June 16): Activity generally normal in eastern New York; numbers of larvae have begun to enter fruit. In western New York egg deposit has been light. (June 23): In western New York larvae were beginning to do damage in Monroe County at the end of the week; activity in the lake zone is increasing.

Delaware. L. A. Stearns (May 26): First injury by first-brood larvae observed today at Bridgeville. (June 18): Peak of first-brood attack is past; injury is light to moderate.

Virginia. A. M. Woodside (June 23): First-brood infestation heavy in Augusta County, owing to dry weather throughout flight period of spring-brood moths. Most first-brood eggs have hatched, and some first-brood pupae are about mature.

Pennsylvania. H. M. Steiner (June 24): Emergence of adults from cages was complete on June 19. Cool, wet weather early in June checked attack at a critical period of hatching. First mature larvae captured in untreated bands on June 23.

Ohio. T. H. Parks (June 25): Moth activity reduced during the first 10 days of June, owing to climatic conditions. Conditions favorable since June 18; entrances now common on apples not well treated.

Indiana. L. F. Steiner (June 21): First-brood larvae are still hatching in small numbers. Larvae have been leaving apples since June 3; moth catches began to increase on about June 19. Average infestation

in well-treated orchards is above normal.

Illinois. W. P. Flint (June 23): First brood more abundant than usual.

Missouri. L. Haseman (June 25): A few first-generation moths observed throughout the State since June 1; in central Missouri the first emergence of second-generation moths was observed on June 24. Moths and larvae abundant.

Wisconsin. C. L. Fluke (June 20): Flights began in Door Peninsula on June 16, reaching a peak from June 18 to 20.

J. A. Callenbach (June 9): Flight of spring emergents is the lightest in Crawford County since 1935.

Washington. C. C. Alexander and E. J. Newcomer (June 19): Moths entered baits in large numbers in the Yakima area from May 19 to 25 and from June 8 to 12. Spring-brood adults are still emerging in fairly large numbers from cooler places. A period of high egg deposition occurred from May 21 to June 2. Larvae began entering fruit in large numbers on about June 4. The season started earlier than in 1940, but is now a week or 10 days later.

PISTOL CASEBEARER (Coleophora malivorella Riley)

Delaware. L. A. Stearns (May 29): Specimens and report of a considerable infestation in an apple orchard received from near Camden.

Pennsylvania. H. M. Steiner (June 24): First pupae observed on May 30 in Adams County; first adults emerged on June 16; and first eggs were observed on foliage on June 22. Emergence of moths more than 50-percent complete on June 23. Parasitization apparently heavier than that observed in previous seasons in orchards that have been heavily infested for several years.

Ohio. T. H. Parks (June 25): Serious injury to foliage of one orchard in Fairfield County for 2 or 3 years. Adults emerged throughout June, the peak occurring on about June 20. A few parasites are present. Eggs now present on foliage.

FRUIT TREE LEAF ROLLER (Cacoccia argyrospila Walk.)

New York. N. Y. State Coll. Agr. News Letter (June): Quite common and causing some injury. About full grown in Monroe County by June 9; nearly every pear injured in one orchard, not properly treated.

Indiana. L. F. Steiner (May 27): Injury at Vincennes less severe than in 1940. (June 4): Adults are now coming to traps at Vincennes in fairly large numbers.

Wisconsin. J. A. Callenbach (June 9): First adults collected from bait pans on May 31 in Crawford County. By June 6, approximately 30 percent of the larvae had pupated. Moderate to heavy damage on apples and sour cherries.

Missouri. H. E. Brown (June 25): Moths were still flying in small numbers on June 24, the peak of flight having occurred on June 7.

APPLE FLEA WEEVIL (Rhynchaenus pallicornis Say)

Ohio. T. H. Parks (June 25): Great increase in numbers in several orchard in central Ohio. A few years ago this insect was a major pest, then decreased in importance, and is now increasing again.

CRANBERRY ROOTWORM (Rhabdopterus picipes Oliv.)

Missouri. L. Haseman (June 25): Beetles, identified as the eastern cranberry rootworm, have been attacking grape foliage and fruit and apple foliage for the last 2 or 3 years in west-central Missouri. They have been active since the first week in June. A few of the beetles and some damage have appeared in central Missouri.

APPLE MAGGOT (Rhagoletis pomonella Walsh)

Connecticut. P. Garman (June 24): First emergence from field cages occurred on June 16.

New York. R. W. Dean (June 24): Emergence on apples in cages at Poughkeepsie began on June 14 and has been continuous, increasing on June 19 and 20, dropping on June 21, and rising again on June 22 and 23. Time of appearance of first fly was normal.

APHIDS (Aphidae)

New York. N. Y. State Coll. Agr. News Letter (June): In eastern New York the rosy aphid (Anuraphis roseus Baker) and the green aphid (Aphis pomi Deg.) have been scarce. In western New York both rosy and green aphids have been abundant, causing considerable injury in some orchards in Genesee, Monroe, and Cayuga Counties. Green aphids are also serious in Wayne and Niagara Counties.

Virginia. A. M. Woodside (June 23): Rosy apple aphid has caused light damage in some commercial orchards in Augusta County. Practically all aphids have left apple.

Indiana. L. F. Steiner (June 4): A marked decrease in abundance of the rosy aphid occurred during the last week at Vincennes. Adults are leaving apple trees.

COMSTOCK'S MEALYBUG (Pseudococcus comstocki Kuw.)

Connecticut. P. Garman (June 24): Infestation general on pears in Fairfield County.

Virginia. G. J. Haussler (June 20): Adult females of the first generation were observed in apple orchards of Albemarle County on June 1, about 8 days earlier than this stage was first observed in 1940. Females found ovipositing on June 10, and eggs of the second generation are very abundant in many orchards. No eggs have hatched.

The first generation is apparently somewhat more abundant than last year in some orchards in Botetourt and Clarke Counties. Deposition of second-generation eggs appeared to be beginning on June 18 in Clarke County.

West Virginia. G. J. Hacussler (June 17): Most of the first-generation females are in the adult stage in orchards in Berkeley and Jefferson Counties. Most of them are still feeding, but a few have begun to oviposit.

South Carolina. W. M. Upholt (June 2): First-generation adults are laying large numbers of eggs on untreated apple trees at Clemson.

APPLE LEAF-ROLLING MIDGE (Dasyneura mali Kieff.)

New York. N. Y. State Coll. Agr. News Letter (June 16): Found in 22 orchards scattered over Monroe County, western New York.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Maine. F. H. Lathrop (May): Light to heavy infestations reported on apple in York County; damage negligible.

Pennsylvania. H. M. Steiner (June 24): Development of large populations observed in late May in Adams County orchards was retarded, owing to prolonged wet periods. Although there was rain during the first week in June, when large numbers of mites were hatching, and during the third week, when adults were laying eggs, there are still sufficient numbers present to cause trouble.

Ohio. T. H. Parks (June 25): Apple orchard in Ashtabula County found heavily infested on June 10. Foliage had already turned gray. Treated orchards are only normally infested.

PEACH

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Connecticut. P. Garman (June 24): Less abundant than usual in peach twigs. Some larvae are already in fruit, owing to hardening of twigs as a result of dry weather.

New York. N. Y. State Coll. Agr. News Letter (June 23): Little activity in western New York up to June 20. Entrances can be found in both twigs and fruit, but the number of fruit entries is not excessive for the first brood, as was the case in 1940.

Delaware. L. A. Stearns (May 26): Maximum activity of first-brood larvae is occurring now throughout the State; brood is about two-thirds developed, and twig injury is severe.

Virginia. A. M. Woodside (June 23): Second-brood infestation lighter than usual in Augusta County.

Georgia. O. I. Snapp (June 18): Infestation at Fort Valley, central Georgia, is about that of an average year; this insect is not economically important in commercial orchards at Fort Valley.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Pennsylvania. H. M. Steiner (June 24): Peak of emergence of larvae from dropped peaches occurred on June 9 in Adams County. First adults emerged from soil beneath infested trees on June 23. Late injuries to fruits are more common than in 1940, but the number of larvae per tree is about equal to that of 1940 in a test orchard near Flora Dale, Adams County.

Georgia. O. I. Snapp (June 18): In the insectary at Fort Valley the first pupation of the season occurred on May 23, 6 days earlier than in 1940. First transformation to adults was recorded on June 2, 10 days earlier than last year. New adults began to emerge on June 5, 13 days earlier than last year. Peak of emergence of new beetles on June 11 was 11 days earlier than last year. In commercial peach orchards emergence began on June 9. Development of peach crop is considerably later than the development of the plum curculio. Infestation, as revealed by jarring records, is heavier than that of 1940. Marked increase in number of adults in orchards in mid-June, owing to emergence of new adults from the soil.

Tennessee. G. M. Bentley (June 24): Found in home orchards throughout the State, where treatments have not been applied.

Mississippi. C. Lyle, et al. (June 25): Injury on treated trees reported from the Grenada district and northeastern counties. Heavy infestations on untreated trees reported from around Meridian, as well as some injury to peach in the Jackson district, and to peach and plum at different places in the Durant area.

Missouri. L. Haseman (June 25): Practically no evidence of damage in central Missouri during June.

Nebraska. H. D. Tate (June 20): Quite common in cherries in Lancaster County.

A PLANT BUG (Lygus sp.)

Illinois. C. L. Metcalf (June 26): Reported from north-central Illinois as destroying the fruits of peaches when about 3/4 inch in diameter late in May and early in June.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

New York. N. Y. State Coll. Agr. News Letter (June): Very numerous throughout the fruit-growing sections of the State. Some nymphs were in the hardshell stage in Orange County by June 23. Second-generation nymphs are pretty well hatched in Orleans County.

CHERRY

CHERRY FRUITFLIES (Rhagoletis spp.)

New York. N. Y. State Coll. Agr. News Letter (June 2): First specimen of R. fausta O. S. was taken from a cage near Hudson, eastern New York, on May 26, whereas R. cingulata Loew first emerged on June 6.

BLACK CHERRY APHID (Myzus cerasi F.)

New York. N. Y. State Coll. Agr. News Letter (June 9): Numerous and causing damage in Chautauqua and Niagara Counties, western New York.

Ohio. T. H. Parks (June 25): Infestation on sweet cherries in some plantings during the early part of June.

Indiana. J. J. Davis (June 23): Reported on June 2 as very abundant at South Whitley.

CHERRY LEAF MINER (Profenusa canadensis Marlatt)

New York. D. W. Hamilton (June 23): Injury more frequent than usual throughout plantings in the Hudson River Valley. Specimens of leaf injury received from Niagara County, in western New York.

Missouri. A. C. Burrill (May 7): Ninety percent of the leaves of Crataegus sp. in a planting at Jefferson City have been destroyed. (Tentatively det. by R. A. Cushman from injured leaf.)

A THRIPS (Frankliniella occidentalis Perg.)

Oregon. S. C. Jones (June 5): Collected from cherry near The Dalles, where it is causing some russet. Also reported as diminishing the set of fruit. (Det. by J. C. Crawford.)

RASPBERRY

RASPBERRY CANE BORER (Oberea bimaculata Oliv.)

New York. F. G. Munding (June 12): Beetles are just beginning to oviposit and to cut the tips of raspberries at Naples.

Ohio. E. W. Mendenhall (June 11): Present in raspberry plantations in Fairfield County, but not much damage caused.

Kentucky. W. A. Price (June 24): Considerable injury caused to new red raspberry canes at Lexington during the second week in June.

Wisconsin. E. L. Chambers (June 28): Unusually abundant throughout the State during June.

A LEAF BEETLE (Cryptocephalus castaneus Lec.)

California. G. S. Kido (June 25): The castaneous beetle, ordinarily a very minor insect on raspberry in the Sacramento Valley, broke out in sufficient numbers to do damage on commercial plantings in Los Gatos. Insect was reported on June 7.

CURRENT

IMPORTED CURRENT WORM (Pteronidea ribesii Scop.)

New York. N. Y. State Coll. Agr. News Letter (June 2): Abundant and doing considerable damage to currents in Orange and Ulster Counties, eastern New York.

Pennsylvania. T. L. Guyton (June 16): Observed at Coatesville.

CURRENT APHID (Capitophorus ribis L.)

Wisconsin. E. L. Chambers (June): Very abundant generally throughout the State.

Minnesota. M. W. Wing (June 19): Abundant in Stearns County about 2 weeks ago.

Utah. G. F. Knowlton (June 15): Leaves of red current crinkled on some bushes at Farmington.

A BORER (Conopia tipuliformis Clerck)

New York. F. G. Munding (June 7): Adults are ovipositing on currents at Geneva and damaging canes.

AN APHID (Aphis varians Patch)

Utah. G. F. Knowlton (June): Apical leaves of black current curled and nearly matured fruits attacked at Smithfield on June 16. On June 21 apical leaves, petioles, and ends of twigs of black and yellow current were observed to be attacked at Farmington, Kayville, and Salt Lake City. Black currents were being attacked at Brigham and North Ogden on June 18.

RASPBERRY SAWFLY (Blennocampa rubi Harr.)

Delaware. J. M. Amos (May 19): Blackberries, being damaged at Bethel by what was reported as a caterpillar, were found to be damaged by this sawfly. Larvae were about full grown, a few being in the prepupal stage. Approximately one-fourth of the plants in an 8-acre field were completely stripped of foliage, and the larvae were eating the buds and green berries.

GRAPE

GRAPE BERRY MOTH (Polychrosis viteana Clem.)

New York. N. Y. State Coll. Agr. News Letter (June 23): Adults have been emerging rapidly during the latter part of the week of June 16-22 throughout the grape belt of Chautauqua County.

Pennsylvania. B. D. Gleissner (June 16): Mortality of overwintered pupae is only 12 percent in Erie County. Spring parasite emergence was about 5 percent, three to five times greater than normal. First moths caught in vineyards on light soil on May 26, and in vineyards on clay soils on June 3. Temperatures during the early egg deposition were unfavorable.

Ohio. T. H. Parks (June 25): Adults emerged late, but considerable injury was caused by first-brood larvae in a vineyard in Franklin County.

GRAPE ROOTWORM (Fidia viticida Walsh)

Missouri. L. Haseman (June 25): Noticeable injury to foliage of grapes throughout central and west-central Missouri since early in June; a few adults are still active.

GRAPE LEAFHOPPER (Erythroneura comes Say)

New York. N. Y. State Coll. Agr. News Letter (June 23): Eggs have begun to hatch in Chautauqua County, and the first nymphs were found on June 17. Many overwintered adults can be found in some vineyards.

Pennsylvania. B. D. Gleissner (June 16): First hatch of eggs was observed in Erie County on June 15, as compared to June 22 in 1940. Population smaller than in 1940; Damage is light.

PECAN AND WALNUT

WALNUT CURCULIO (Conotrachelus juglandis Lec.)

Missouri. L. Haseman (June 25): Most of the light crop of walnuts on some trees in central Missouri are falling, owing to damage. They began falling in the middle of June.

PECAN CIGAR CASEBEARER (Coleophora caryaefoliella Clem.)

Oklahoma. F. A. Fenton (June 24): Found at Porum on June 17.

WALNUT CATERPILLAR (Datana integerrima G. & R.)

Oklahoma. R. G. Dahms (June 22): Observed on pecan trees in Comanche County.

PECAN LEAF CASEBEARER (Acrobasis juglandis LeB.)

Mississippi. T. F. McGehee (May 22): Specimens collected on pecan in Harrison County.

BLACK PECAN APHID (Melanocallis caryaefoliae Davis)

Georgia. T. L. Bissell (June 25): Conspicuous yellow spots produced on pecan trees in Lamar County. Very few aphids present on June 18:

Mississippi. M. L. Grimes (June 25): Heavy infestation observed in Clarke County.

PECAN PHYLLOXERA (Phylloxera devastatrix Perg.)

Mississippi. C. Lyle (June 25): Injured twigs received from Coahoma, Jefferson, Tallahatchie, Warren, Washington, and Yazoo Counties between May 20 and June 20. Damage is very serious.

CITRUS

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Florida. H. T. Fernald (June 21): Second generation of adults are now appearing at Winter Park, in central Florida.

FLORIDA RED SCALE (Chrysomphalus aonidum L.)

Florida. W. Mathis (June 23): Reproduction is increasing rapidly on the lower east coast.

BLACK SCALE (Saissetia oleae Bern.)

California. R. S. Woglum (June): Situation generally the most satisfactory for many years. Comparatively little difference between coastal and interior districts. Highest infestations found in eastern San Bernardino County, especially on grapefruit, but even here percentage of commercial orchards affected is not large.

YELLOW SCALE (Aonidiella citrinus Coq.)

California. R. S. Woglum (June): Slight increase over last year in eastern San Bernardino County, but not serious. The parasite, Comperiella sp., appears to have been much less effective than in previous years.

PURPLE SCALE (Lepidosaphes bockii Wasm.)

California. R. S. Woglum (June): Heaviest build-up of any scale insect over last year, occurring not only in individual orchards but spreading into orchards not previously infested in Orange and southern Los Angeles Counties. Apparently a serious problem in the coastal areas of these two counties. Spring hatch has started.

CITRICOLA SCALE (Coccus pseudomagnoliarum Kuw.)

California. R. S. Woglum (June): Numbers have decreased since 1940. Very few orchards are badly infested, most of them being in eastern San Bernardino County. Hatching under way for a month. In central California this scale has been a problem to more growers than for many years. Hatch has been heavy since early in May.

CITRUS THRIPS (Scirtothrips citri Moulton.)

California. R. S. Woglum (June): Although causing light damage to some fruit, damage is generally the lightest for many years in central California. Fruit scarring has appeared for over 2 weeks in some untreated groves in southern Tulare County. In southern California numbers have been increasing in most lemon districts of Los Angeles, San Bernardino, and Riverside Counties.

A RUST MITE (Anychus clarki McG.)

Texas. C. O. Gingrass (June 19): Citrus severely attacked in Hidalgo County.

PAPAYA

A HORNWORM (Erynnis sp.)

Florida. W. Mathis (June 23): The first papaya hornworm for the season was noticed today on a papaya plant at the laboratory at Saint Lucie, on the lower east coast.

TRUCK - CROP INSECTS

VEGETABLE WEEVIL (Listroderes obliquus Klug)

Mississippi. C. Lyle (May 26): Adults were taken from cabbage and tomato in Warren County today.

Texas. D. C. Parman (June 24): Made its first appearance today at Uvalde and was very destructive to gardens during the winter and early spring. Carrots and tomatoes were severely damaged.

PALE-STRIPED FLEA BEETLE (Systema blanda Molsh.)

Ohio. T. H. Parks (June 25): Seriously damaged commercial bean plantings in Columbiana and Mahoning Counties.

Georgia. T. L. Bissell (June 7): Beetles have just about disappeared in the Piedmont region where they were present last month. Fifteen counties, from Hall southwestward to Meriwether, reported damage, or presence of beetles, most of which attacked cotton. Cotton has fully outgrown the injury, which was mainly on the first (cotyledonary) leaves. Beetles were observed in Spalding, Pike, Meriwether, Coweta, and Fayette Counties, and reported from Butts County.

STRIPED CUCUMBER BEETLE (Diabrotica vittata F.)

Maine. A. E. Brower (June): Very troublesome about Augusta.

Massachusetts. A. I. Bourne (June 23): Present in normal abundance.

New York. N. Y. State Coll. Agr. News Letter (June 23): Usual damage in the lower Hudson Valley and in western New York.

Virginia. S. B. Fenne (June 10): First beetle noted on cucumber today at Blacksburg. Appeared suddenly in large numbers, causing light damage.

Missouri. L. Haseman (June 25): Less abundant than usual, but numerous in central Missouri; also reported from other parts of the State.

Minnesota. A. G. Ruggles and assistants (May 20-June 19): Very abundant in Ramsey, Scott, Le Sueur, and Faribault Counties, and moderately abundant in Pope, Renville, Sibley, Watonwan, and Lincoln Counties, all in the southern half of the State.

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica soror Lec.)

California. C. C. Deonier (June 16): Heavy flight was observed at Nice on the morning of June 3, and during the following 2 weeks they were frequently reported damaging flower and vegetable gardens. Thousands of adults were observed on a severely damaged hedge at Lucerne on the evening of June 10. Terrific damage reported at places on the lower part of the lake. Beetles have fed heavily on alfalfa, fig leaves, and all garden stuff.

BLISTER BEETLES (Meloidae)

- Massachusetts. A. I. Bourne (June 23): Specimens of Pomphopoea sayi Lec. and reports on the damage caused to lupines by this beetle were received from Berkshire County, Williamstown in the northern part and from Stockbridge in the southern part. One report stated that in less than 3 days the beetles had reduced an exceptionally good planting of English lupines to mere stems, stripping both the flowers and foliage and preferring the tip ends of the flower spikes.
- West Virginia. F. W. Craig (June 18): A number of Chinese olms in Charleston were rather seriously damaged during the week of June 9-14. Outbreak reported as occurring in a small field of alfalfa in Mason County.
- Ohio. T. H. Parks (June 28): Epicauta cinerea Forst. very abundant generally in alfalfa fields where they are feeding on the plants.
- Kentucky. W. A. Price (June 24): Black blister beetles, Epicauta pennsylvanica (Deg.), were destructive to alfalfa at Louisa.
- Alabama. J. M. Robinson (June 16): E. vittata was reported as active on vegetables at Demopolis and on beans at Auburn and Selma. (June 21): Epicauta sp. reported as active on soybeans at Anniston and on tomatoes at Alpine.
- Mississippi. C. Lyle, et al. (June 25): Worst outbreak of the southern striped blister beetle (E. lomniscata F.) ever recorded occurred during the latter part of May and the first half of June. Specimens were received from many counties in the eastern half of the State, where they were feeding on practically everything. (June 25): Specimens of the ash-gray blister beetle (Macrobasis unicolor Kby.) were received on June 19 from Choctaw County, where they were feeding on soybeans. Beetles probably belonging to this species were reported injuring soybeans in Jackson County on June 18.
- Nebraska. H. D. Tate (June 20): E. pennsylvanica and E. maculata (Say) were found in alfalfa in Hitchcock County on May 21. Macrobasis unicolor Kby. were found in Buffalo County on May 21, and M. immaculata Say were found flying around lights in Redwillow County on May 20.
- Missouri. A. C. Burrill (June 4-6): The gray blister beetle (Epicauta cinerea Forst.) made its first appearance, and in 2 days ate off leaflets from top leaves of several 8- to 15-foot trees of Albizia julibrissin, shade trees along Moreau Drive, Jefferson City; as high as 60 or more beetles per tree; kept flying from lawns to gather on the trees on afternoon of June 4 and were often mating that evening and next day.
- Texas. R. K. Fletcher (May 19): E. pennsylvanica found on potatoes in Cass County.

Arizona. C. D. Lobert (June 21): Several swarms of the blister beetle (E. pardalis Lec.) were observed in the Wilcox area. No crop damage as yet. The beetles were in flight and settling on mesquite trees in the range.

SEED-CORN MAGGOT (Hyalemya cilicrura Rond.)

New York. N. Y. State Coll. Agr. News Letter (June 9): Abundant and destructive in both lower Hudson River Valley and western New York.

Michigan. E. I. McDaniel (June 11): Prevalent throughout the State. Reported working in sprouting potatoes at Crystal Falls, and killing about 15 acres of corn in the vicinity of Lansing. Sweepings in alfalfa fields around Benton Harbor produced about 600 individuals, in 200 sweepings with an ordinary 1-foot net.

Utah. G. F. Knowlton, et al. (May 30): Seed-corn maggot has killed nearly all lima beans, has seriously reduced stand of young peas and corn, and largely destroyed melon seed at Pintura. (June 3): Adults very abundant in peafields at Pleasant Grove, Mapleton, and Payson. Injury has necessitated replanting of 3 fields of lima beans in the Spanish Fork-Payson area. (June 12): Damaged heavily manured squash seeds, destroying much of the germinating seed in a large patch at American Fork, and late plantings of lima beans in numerous fields in Utah County, particularly near Spanish Fork. (June 14): Six acres of Hubbard squash and banana squash planted at Roosevelt were largely destroyed by heavy infestations.

FALSE CHINCH BUGS (Nezara ericace Schill.)

North Dakota. J. A. Munro (June 23): Destroyed 10 acres of seedling flax at Barton, in Pierce County.

Utah. G. F. Knowlton, et al. (May 21): Causing moderate injury to corn and other garden crops, being most abundant on radishes and turnips at Minersville and Milford.

SOUTHERN GREEN STINKBUG (Nezara viridula L.)

Texas. R. K. Fletcher (June 17): Breeding widely on field peas and causing injury to peaches in Robinson County, also damaging sweet corn and tomatoes on June 15.

RED-SHOULDERED PLANT BUG (Thyanta custator F.)

Utah. G. F. Knowlton (June 21): Collected on canning peas at Pleasant Grove, Heber, Kay'sville, and Spanish Fork, and on tomato plants at Layton. Fairly abundant in some places.

GARDEN CENTIPEDE (Scutigera innaculata Newp.)

Utah. G. F. Knowlton, et al. (June): Reported as damaging pole beans, onions, lettuce, potatoes, cucumbers, cantaloups, radishes, corn, asparagus, and peas at Smithfield, Bountiful, Magna, Salt Lake City, and Payson.

California. M. W. Stone (June 24): Destroyed 10 out of 30 acres of lima beans in the seedling stage in a field at Carpinteria, Santa Barbara County. Remainder of plants were severely damaged.

PILLBUGS (Oniscidae)

Mississippi. G. L. Bond (June 25): Very numerous and doing serious damage to beans, butterbeans, peppers, tomatoes, and other vegetables on June 14 in a garden in Jackson County.

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decehlineata Say)

New York. N. Y. St. Coll. Agr. News Letter (May and June): Very numerous on potatoes and tomatoes in eastern New York and on Long Island the last week in May, and causing considerable damage in Albany County. The next week there were egg masses present and by June 9 the larvae had started to hatch. Eggs were observed in Dutchess County on June 5. Adults are rather scarce in Rockland County. In the western part of the State, in Orleans, Oswego, and Monroe Counties, the adults have been more numerous.

Tennessee. G. M. Bentley (June 4): Caused complete defoliation of potato plants at McMinnville, Warren County.

Missouri. L. Haseman (June 25): Second-generation beetles began emerging in central Missouri by the middle of June, but few eggs were deposited up to June 24.

Minnesota. A. G. Ruggles and assistants (May 20-June 19): Very abundant in Itasca, Todd, Stearns, Le Sueur, and Scott Counties, moderately abundant in Renville, Sibley, Brown, Watonwan, and Houston, and scarce in St. Louis, Faribault, and Lincoln Counties.

Iowa. H. E. Jaques (June): Light to heavy infestations in scattered counties throughout the State.

North Dakota. H. S. Telford (June 23): Light infestations have occurred on potatoes at Hillsboro and at Grand Forks and vicinity.

Nebraska. H. D. Tate (June 20): Reported from Harlan County on May 29. Large numbers observed on potatoes and considerable numbers of eggs present in experimental gardens in Lancaster County on May 16. Noted that they were stripping leaves on potatoes in Butler County on June 10.

Texas. J. N. Roney (June 24): Found on potatoes and tomatoes in Brazos County today.

POTATO FLIEA BEETLE (Eutrix cucumeris Harr.)

Vermont. H. L. Bailey (June 23): Extremely abundant on tomato and potato plants in Washington County, early in June.

Connecticut. M. Turner (June 23): At Mount Carmel damage is continuing and infestations on potatoes and tomatoes are heavy.

Pennsylvania. B. F. Coon (June 21): Population at Lancaster is smaller than in previous years and injury to tobacco and potato crops is less than normal.

Virginia. L. D. Anderson and H. G. Walker (June 27): New brood is very abundant and causing severe damage in many potato fields on the Eastern Shore.

Nebraska. H. D. Tate (June 20): Beetles present on potatoes in large numbers and considerable injury was apparent in Lancaster County on May 16.

Utah. G. F. Knowlton (June 2): Damaging potatoes at Highland and Alpine today. (June 6): Beetles have injured potato and tomato foliage at Perry and potato foliage at Smithfield.

POTATO LEAFHOPPER (Empoasca fabae Harr.)

Virginia. H. G. Walker and L. D. Anderson (June 27): More abundant in potato fields than usual at Norfolk, on the Eastern Shore.

Missouri. H. E. Brown (June 15): Observed for first time today in large numbers on potatoes.

Minnesota. A. G. Ruggles and assistants (June): Moderately abundant in the south-central section of the State.

Iowa. H. E. Jaques (June): Light to moderate infestations in the southeastern, central, and western sections of the State.

Texas. J. N. Roney (May 23): Reported on beans and potatoes in Brazos County.

POTATO PSYLLID (Paratrioza cockerelli Sulc)

Montana. D. J. Platsch (June 20): Sweeps in early potato plantings (May 1) show about three times as many adult psyllids as at this time in 1940. First definitely diseased plants were noted today near Billings, Yellowstone County. Nymphs found on leaves were in the second and third instars.

TARNISHED PLANT BUG (Lygus pratensis oblineatus Say)

Virginia. H. G. Walker and L. D. Anderson (June 27): Rather abundant in many potato fields on the Eastern Shore.

TOMATO FRUITWORM (Heliothis armigera Hbn.)

South Carolina. W. M. Upholt (June 25): Damage to tomatoes has been reduced to about 3 or 4 percent in Orangeburg and Bamberg Counties, and to 6 to 8 percent in Beaufort County.

Alabama. J. M. Robinson (June 5): Reported as active on tomatoes today at Perryville.

Mississippi. C. Lyle (June 25): Reported as injuring corn and tomatoes in most sections of the State.

Indiana. J. J. Davis (June 23): Tomato fruits were being damaged at Washington, Daviess County, on June 10, the worms being only a week old. Indications are that the species overwintered safely in southern part of the State.

TOMATO WORMS (Protoparce spp.)

South Carolina. W. M. Upholt (May 30): Light damage by hornworms is beginning to show up on tomatoes grown in experimental plots at Edisto Station, Barnwell County.

Utah. G. F. Knowlton (June 21): The tomato hornworm has damaged a few tomato plants west of Layton.

BEANS

MEXICAN BEAN BEETLE (Epilachna varivestis Muls.)

Connecticut. N. Turner (June 23): Eggs now hatching. Normal damage on garden beans.

New York. N. Y. State Coll. Agr. News Letter (June 16): Adults are causing some injury on Long Island and in the lower Hudson River Valley. Observations indicate the beetles are appearing 10 days earlier than last year in western New York; overwintering beetles are appearing in larger numbers than in the last 2 years, and egg masses are present.

Virginia. L. A. Hetrick (June 6): Adults are flying and injury is beginning to show up on bean foliage at West Point.

Pennsylvania. G. B. Sloesman (June 17): Numerous on beans in the Philadelphia area.

South Carolina. W. C. Nettles and F. Sherman (June 24): Below normal thus far this season.

Georgia. T. L. Bissell (June 19): Becoming injurious at Experiment. (June 20): Very light damage on bunch beans at Plains, Sumter County.

Mississippi. C. Lyle, et al. (June 25): Specimens received from Jasper, Neshoba, and Wayne Counties, with reports of injury from Scott, Leake, and Winston Counties. Specimens were found in Grenada County the first week in June and in Tate County on June 11. Unusually light infestation in the northeastern counties and light to heavy in the Meridian area.

Tennessee. G. M. Bentley (June 16): Found on garden beans at Greenfield, Weakley County, today. Ten-percent defoliation.

BEAN LEAF BEETLE (Cerotoma trifurcata Forst.)

West Virginia. L. M. Peairs (June 13): Reported as present on beans in large numbers in Wetzel County.

Indiana. J. J. Davis (June 23): Reported as abundant on beans at Ambia on May 27.

Illinois. W. P. Flint (June 23): Very abundant and has caused considerable ragging of young soybean leaves. Larvae have injured some plants by feeding on the stalks and roots.

Mississippi. C. Lyle and assistants (June 25): Reported as still causing injury to beans in Scott County and the Durant area.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus Zell.)

Georgia. T. L. Bissell (June 25): A few bean plants were killed on May 30 at Experiment. Some damage occurred at Tifton on June 13 and serious damage at Experiment on June 14.

THREE-CORNERED ALFALFA HOPPER (Stictoccephala festina Say)

Mississippi. C. Lyle (June 25): Number of nymphs were feeding on pole beans in Choctaw County.

PEAS

PEA APHID (Macrosiphum pisi Kltb.)

New York. N. Y. State Coll. Agr. News Letter (June): Not very numerous in eastern New York. In the western part of the State they had been light in numbers until the middle of the month, when they became a serious problem on canning peas in upper Livingston and western Genesee Counties. Since the heavy rains, the populations have fallen off and danger from further injury seems past. Aphids remain numerous in Wayne County.

Ohio. T. H. Parks (June 25): Serious injury to peas in Pickaway County. Reported from Canal Winchester, Franklin County.

- Indiana. P. T. Ulman (June 10): Reported as causing heavy damage to pea crop at Indianapolis. One canner reported that there were at least several bushels of ladybugs, the most common (95 percent) being Hippodamia convergens Guer., around the pea sheller.
- Wisconsin. J. E. Dudley, Jr. (June 16): Infestation on peas in Dane County has been greatly cut down, owing to heavy continued rains June 7 to 14. Fungus disease has also been a factor.
- Minnesota. A. G. Ruggles and assistants (May 20-June 19): Moderately abundant in Lake of the Woods County.
- Nebraska. H. D. Tate (June 20): Found to be abundant in alfalfa fields in Sarpy, Buffalo, Hitchcock, and Furnas Counties on May 23.
- Utah. G. F. Knowlton (June): Moderately abundant on alfalfa throughout the State the latter part of May. Found on peas in Utah County on June 2, and at Smithfield, Cache County, on June 6. By June 20 they had become more numerous and very destructive to canning peas at Pleasant Grove, in Utah County; at Smithfield; at Saline, Sevier County; Gunnison, in Sanpete County; and at Nephi, in Juab County. From 10 to 18 percent of the third-instar aphids in Davis County were parasitized by braconids.

PEA WEEVIL (Bruchus pisorum L.)

- Utah. G. F. Knowlton (June): Abundant in some fields at Vineyard, Payson, American Fork, Highland, Alpine, Kayville, and Spring Lake. First eggs were found on June 3 at Ogden and Pleasant Grove.

THRIPS (Thysanoptera)

- Utah. G. F. Knowlton (June): In northern Utah thrips have been causing much injury to foliage and pods of peas, as well as in Cache, Box Elder, Weber, and Utah Counties. At Hopper, in Weber County, and at Tremonton, Box Elder County, they were also infesting early tomato blossoms.

CABBAGE

IMPORTED CABBAGE WORM (Pieris rapae L.)

- New York. N. Y. State Coll. Agr. News Letter (June): On Long Island nearly full-grown worms were found on cabbage on May 26. They were also present in Rockland County. By June 16 they were plentiful in Ulster County and the butterflies were numerous. In western New York cabbage worms and butterflies have been scarce.
- Pennsylvania. B. F. Coon (June 18): Adults appeared on cabbage at Lancaster and young larvae are beginning to cause noticeable injury in garden plots.

Missouri. L. Haseman (June 25): Heavy increase in central Missouri during June.

Iowa. H. E. Jaques (June): Light to moderate infestations in scattered counties throughout the State, with a heavy infestation in Louisa County, in the southeastern section.

Nebraska. H. D. Tate (May 30): Reported as destroying cabbage in untreated areas in Lancaster County.

HARLEQUIN BUG (Murgantia histrionica Hahn)

Virginia. L. A. Hetrick (June 7): A few adults are present on turnip foliage at West Point.

South Carolina. W. C. Nettles and F. Sherman (June 24): Very heavy infestation on rape and collards in Allendale, in the southern part of the State.

Mississippi. C. Lyle, et al. (June 25): Specimens received from Montgomery County on June 4. Heavy infestations reported in the Jackson district, Leake County, the Meridian district, and in Tate County.

New York. N. Y. State Coll. Agr. News Letter (June): Severe maggot injury in Nassau, Rockland, Albany, and Ulster Counties, in eastern New York. About 90 percent of the maggots had pupated by June 9 after one of their most destructive seasons. In western New York injury has also been severe, with the worst infestation in years in Orleans County.

SQUASH

SQUASH BUG (Anasa tristis Deg.)

Maine. A. E. Brower (June 18): Abundant and troublesome on squash and cucumbers.

New York. N. Y. State Coll. Agr. News Letter (June 23): Squash bugs have appeared in lower Hudson River Valley, but no eggs have been observed.

Georgia. T. L. Bissell (June 6): Eggs are common on squash plants today at Vaughn, Spalding County.

Mississippi. C. Lyle, et al. (June 25): Specimens were received from Simpson County on June 16. Reported as unusually abundant in Jackson County, with heavy damage to squash in the Meridian area and in Sunflower County.

Iowa. H. E. Jaques (June): Light to moderate infestations in the eastern and western sections of the State.

Missouri. L. Haseman (June 25): Numerous in many gardens during the latter part of the month.

Nebraska. H. D. Tate (June 20): A request for information on control of squash bug was received from Knox County on May 26.

Texas. R. K. Fletcher (June 24): Reported on squash in Brazos County on May 25 and in Grimes County on June 4.

Utah. G. F. Knowlton (June): Abundant at Salt Lake on June 11. Reported as abundant and injuring very young squash and pumpkins at Pleasant Grove on June 20. Large numbers are mating and eggs have been laid on the first leaves produced.

SQUASH BEETLE (Epilachna borealis F.)

Virginia. L. A. Hetrick (June 23): Adults were noted on foliage of squash plants in a garden near West Point.

Mississippi. C. Lyle (June 25): Injuring pumpkins in Bolivar County on June 3. Specimens received from Madison County on June 14.

MELONS

PICKLEWORM (Diaphania nitidalis Stoll.)

South Carolina. O. L. Cartwright (June 27): First larvae of season about half grown on squash at Clemson.

Mississippi. C. Lyle, et al. (June 25): Reported as present in Copiah County and causing some damage in the Meridian area.

IMBRICATED SNOUT BEETLE (Epicaerus imbricatus Say)

Indiana. J. J. Davis (May 29): Reported as damaging watermelons at Pekin today. (Det. by L. L. Buchanan.)

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

Massachusetts. A. I. Bourne (June 23): Reported and observed in normal abundance.

New York. N. Y. State Coll. Agr. News Letter (June 9): Causing considerable damage in western New York.

South Carolina. D. Dunavan (June 23): Small colony of beetles exists in a local garden at Clemson and has been reproducing continuously since early spring. Believe this is the first permanent infestation in this part of the State.

Utah. G. F. Knowlton (May 30): Damaged asparagus at Sunset, Layton, and North Farmington. (June 10): Damaging asparagus at Plain City and Layton.

SPINACH

SPINACH LEAF MINER (Pegomya hyoscyani Panz.)

Massachusetts. A. I. Bourne (June 23): Reported from many sections of the State as generally present in unusual abundance.

Rhode Island. B. Dady (June 16): Prevalent in chard and beet leaves at Providence.

Wisconsin. C. L. Fluke (June 20): Generally distributed in commercial sugar-beet fields in Brown County.

ONIONS

ONION THRIPS (Thrips tabaci Lind.)

Virginia. H. G. Walker and L. D. Anderson (June 27): Much more abundant than usual on cabbage and onions on the Eastern Shore.

New York. N. Y. State Coll. Agr. News Letter (June 16): Injury appearing on Long Island, and in Wayne County in western New York.

SWEETPOTATO

TORTOISE BEETLES (Cassidinae)

South Carolina. W. C. Nettles and F. Sherman (June 24): Two species were reported as injuring sweetpotatoes in York County, in the central part of the State.

Mississippi. C. Lyle, et al. (June): Sweetpotatoes were being injured by an undetermined species in the Meridian area; by Chelymorpha cassidea F. in Anite, Choctaw, Madison, and Noxubee Counties; by Chirida guttata Oliv. in Montgomery County; by Metritona bicolor F. in Copiah County; and by M. bivittata Say in Montgomery County.

A MILKWEED BEETLE (Chrysocbus auratus F.)

Alabama. J. M. Robinson (June 23): Reported as destroying foliage on a patch of sweetpotatoes at Fort Payne.

STRAWBERRY

STRAWBERRY LEAF ROLLER (Ancylis comptana Froel.)

Ohio. E. W. Mendenhall (June 11): Causing some damage in a raspberry plantation in Fairfield County.

Nebraska. H. D. Tate (June 20): Observed as numerous on leaves of strawberry plants on May 29 in Lancaster County.

A LEAF ROLLER (Cacoccia obsoletana Walk.)

Ohio. T. H. Parks (June 25): Specimens, together with injured leaves, were received from Kenton on May 29. We rarely receive this species.

STRAWBERRY CROWN BORER (Tyloderma fragariae Riley)

Kentucky. W. A. Price (June 24): Injured or killed plants were common in new patches the latter part of June in the Louisville berry area, where 78 percent of the plants in a 3-year-old patch were found infested.

SPITTLE BUGS (Philacnus spp.)

Connecticut. P. Garman (June 24): Many species are present and more numerous than usual on shrubbery and low-growing plants in New Haven County.

Delaware. L. A. Stearns (June 3): Several adults of the color varieties of P. leucophthalmus L. are very abundant on strawberries at University Farm, Newark.

PEPPER

PEPPER WEEVIL (Anthonomus eugenii Cano)

California. J. C. Elmore (June 3): Large percentage of blossom buds in a field of paprika near San Juan Capistrano were infested. Plants were small and setting their first blossom buds.

TOBACCO

TOBACCO FLEA BEETLE (Epitrix parvula F.)

Pennsylvania. B. F. Coon (June 21): Very scarce at Lancaster and damage is light.

Florida. F. S. Chamberlin (June 10): More abundant in tobacco in Gadsden County than for several years.

A CURCULIONID (Trichobaris bridwelli Barber)

Georgia. P. M. Gilmer, (May 27): Reported as damaging tobacco rather extensively in certain fields. First record on tobacco. (Det. by L. L. Buchanan.)

TOBACCO THRIPS (Frankliniella fusca Hinds)

Florida. F. S. Chamberlin (June 10): Abundant on tobacco in Gadsden County, and causing considerable injury to shade-grown tobacco.

C O T T O N I N S E C T S

BOLL WEEVIL (Anthonomus grandis Boh.)

South Carolina. F. F. Bondy, et al. (June 14): Total of 20,800 plants examined in Florence County during the last week, and 196 weevils found, or 1 weevil to 106 plants, as compared with 1 weevil to 978 plants in 1940. (June 21): Square-infestation counts made in several fields near woods, infestation averaging 22.8 percent.

Georgia. T. L. Bissell (June 25): One weevil found on punctured square in Spalding County on June 18. Growing point of plants reported as killed. Square counts were made on four farms in Sumter and Macon Counties, southwestern Georgia, on June 20, and from 26 to 29 percent of squares on advanced cotton were found to be punctured. Damage well distributed in three fields in the open but in the fourth, which adjoined a woods, the weevils were concentrated on the side next to the woods, 90 percent of the squares being infested. On June 24 it was found that weevils had become numerous in Spalding County, since rains had begun 10 days previously. Found in four fields, most of them near woods.

P. M. Gilmer, et al. (June 14): Infestations in fields in the area of Tift, Berrien, Lowndes, and Echols Counties show a remarkably high percentage for this early in the season. Whereas many fields are uninfested or lightly infested, many have square infestations of from 6 to 12 percent. (June 21): Movement out of hibernation in Tift and Berrien Counties is apparently about complete, but damage has increased very little during the last week. Infestations average below 10 percent, except in the more heavily infested fields. Reported as increasing in northern section. First of first seasonal brood adults reported from Echols County.

Florida. C. S. Rude, et al. (June 21): Infestation remains light in most sections, despite the fact that emergence from hibernation cages is heavy and late. Weevils reported as abundant in fields of northwestern Florida.

Alabama. J. M. Robinson (June 23): Reported on June 18 from moderately to very active on cotton at Prattville, Autauga County, central Alabama.

Mississippi. C. Lyle (June 16): Heavy square infestations and large populations per acre reported during the last week. Weevils found on 64 of 101 farms visited in 35 counties, averaging 187 per acre, an increase from 140 per acre the previous week, and 96 2 weeks ago. On this date in 1940 only 20 percent of the farms were infested, weevils averaging about 30 per acre. Infestations are beginning to appear even in the most northern counties, including Prentiss, Tippah, and Union; several heavy infestations reported from the Delta counties.

Louisiana. R. C. Gaines, et al. (June 21): Punctured squares numerous in most fields in Madison Parish, in which plots were located.

Texas. K. P. Ewing, et al. (June 21): During the week 3,925 squares were inspected in 11 fields in McLennan and Falls Counties, averaging 30.7 percent of punctured squares. Maximum infestation was 55.7 percent in a field in the Brazos River bottom; second highest was 44.7 percent; and the third highest 37.5 percent. All inspections were made in river-bottom fields.

C. R. Parencia, et al. (June 21): Two weevils found during inspections in Calhoun County last week. In 1 field 300 squares examined were found to have 25.7 percent punctured.

A. J. Chapman (June 21): Square-infestation counts made in 26 fields within a radius of 10 miles of Brownsville, 200 squares being examined in each field. Infestation in the individual fields ranged from 1.0 to 93.5 percent, averaging 36 percent for the 26 fields. Heaviest infestations found in the early planted cotton.

COTTON FLEA HOPPER (Psallus scriptus Reut.)

Texas. F. L. Thomas (June 18): Damage being caused in the coastal-bond area. Very little fruit is escaping at Port Lavaca, where infestation has increased to an average of 27 per 100 plants in 12 fields. (June 25): Cotton being damaged in southern Texas, but injury is not particularly important in the northern two-thirds of the State. There was a 50-percent increase of young hoppers near Port Lavaca, where the average count was 40 per 100 plants.

C. R. Parencia, et al. (June 21): Total of 4,400 cotton terminal buds inspected in 12 fields in Calhoun County during the week. An average of 8.25 adults and 31.75 nymphs was found per 100 terminal buds, as compared with an average of 8.79 adults and 19.04 nymphs last week. Several fields of May-planted cotton are heavily infested.

K. P. Ewing, et al. (June 21): During the week 21,575 terminal buds were inspected in 68 fields in McLennan and Falls Counties. Average infestation was found to be 4.86 per 100 terminal buds. Ten fields showed an average of from 10.0 to 25.2 per 100 buds.

A. J. Chapman (June 21): Infestation in the vicinity of Brownsville is sufficient to prevent the setting of squares. Adults, nymphs, and numerous blasted squares were observed.

C. O. Gingress (June 19): Untreated cottonfields in Hidalgo County are being severely damaged.

APHIDS (Aphididae)

South Carolina. F. F. Pondy, et al. (June 21): Some cotton aphids are present in all cottonfields in Florence County, and two severe infestations have been reported. The aphids were found to be quite heavily parasitized, and several predators were also observed.

Georgia. T. L. Bissell (June 25): Cotton infested and leaves curled on edges of a field at Montezuma, Macon County, on June 20.

P. M. Gilner, et al. (June 21): Aphids are beginning to reappear in isolated fields in Tift and Berrien Counties. A few heavy infestations reported in small areas in such fields. Some parasitization noted.

Mississippi. C. Lyle, et al. (June 25): Cotton aphids, Aphis gossypii Glov., reported as generally but lightly infesting cotton over the northeastern counties, in the Durant, Jackson, and Meridian districts, and in Clay, Lowndes, Noxubee, Webster, and Winston Counties.

E. W. Dunnam, et al. (June 21): No aphid counts were made in Washington County during the last week, but the population appeared to increase. Large aphids of the dark phase persist. Some small yellow forms appear to be present also.

Louisiana. R. C. Gaines, et al. (June 21): Infestation light in Madison Parish during the last week.

COTTON LEAF WORM (Alabama argillacea Hbn.)

Texas. F. L. Thomas (June 25): Reported only in small numbers. Small, newly hatched larvae of the second generation have appeared in Calhoun County.

C. R. Parencia (June 10): One larva collected on cotton at Long Mott, Calhoun County, on June 6. (Det. by C. Heinrich.)

C. R. Parencia, et al. (June 21): A larva about 3 days old was found on a farm 3 miles west of Port Lavaca on June 17.

A. J. Chapman, et al. (June 21): A few specimens were noted in cotton on the Texas side of the Rio Grande River, near Brownsville.

THRIPS (Thysanoptera)

Georgia. T. L. Bissell (June 25): Cotton in a screenhouse was heavily infested and stunted on June 2.

Mississippi. E. W. Dunnam, et al. (June 20): Damage is swiftly disappearing in cotton in Washington County, and the thrips population is not increasing.

C. Lyle (June 25): Injured cotton plants received from Attala County.

Texas. F. L. Thomas (June 18): Damage to cotton in the coastal-bend area. Plant growth slowed up, owing to weather conditions, so that injury has appeared, despite rains in some of the fields of Brazos, Jackson, and Kaufman Counties.

FOREST AND SHADE - TREE INSECTS

PERIODICAL CICADA (Magicalicada septendecim L.)

New York. N. Y. State Coll. Agr. News Letter (June 9): This insect has been observed generally throughout the Red Hook, Rock City, and Tivoli areas in Dutchess County, and its noise was heard as far south as Manchester Bridge, just east of Poughkeepsie, on June 3.

CANKERWORMS (Geometridae)

Vermont. H. L. Bailey (June 23): Groups of elms completely defoliated by the spring cankerworm (Paleacrita vernata Peck) in Shelburne, Chittenden County, and Ferrisburg, Addison County. Pupae found in soil on June 6, when a few larvae were still feeding.

West Virginia. F. W. Craig (June 18): Outbreak of spring cankerworm, which has occurred in the vicinity of Wheeling for the last several years, was not nearly so intense this spring. Greatest damage was on the edge of the heavily infested areas of last year and in an area 25 miles to the south. Larvae were mature on June 10. In 1940 larvae were still feeding on June 20, whereas on June 9, 1939, they had already disappeared.

North Dakota. J. A. Munro (June 23): Trees badly defoliated by cankerworms along the Shoyenne River near Fargo and at various points along the Red River, on the eastern border of the State. Spring cankerworms predominate.

Nebraska. H. D. Tate (June 20): Spring cankerworms noticed in Redwillow, Furnas, and Phelps Counties on May 22. Damage to elms and hackberry very severe. Reported on Chinese elms in Custer County on May 26. Severe infestation noted on boxelder, willow, wild plum, wild rose, elm, chokecherry, and wild gooseberry in Dawes and Sioux Counties on June 5.

Kansas. H. B. Hungerford (June 12): The fall cankerworm (Alsophila pometaria Harr.) was very destructive in the woodlands of Douglas County.

FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.)

Maine. F. H. Lathrop (June 13): Generally abundant in May throughout most of the southwestern part of Maine. Reported as numerous in Kennebec, Knox, and Lincoln Counties, and a few in several localities in Washington County. Damage generally light to moderate.

Vermont and Massachusetts. J. V. Schaffner, Jr. (June 18): Outbreak, which has persisted for the last 5 or 6 years in many localities throughout the southern half of Vermont and the western part of Massachusetts, has subsided, with the exception of the vicinity of Richmond and West Stockbridge in the extreme western part of Berkshire County, Mass. On June 18 in these two towns hundreds of acres of woodlands were

25- to 75-percent defoliated. A considerable number of the larvae are dying of wiltlike and fungous diseases.

Wisconsin. E. L. Chambers (June 28): Very bad in several northeastern counties.

Mississippi. J. P. Kislenko (June 25): Egg masses observed on the twigs of forest trees in Forrest County on June 19; several times as numerous as last year.

Nebraska. H. D. Tate (June 20): Reported as very abundant and destructive to trees and shrubs in Scotts Bluff County. Cottonwood and poplar trees were damaged most heavily, and injury was noted on Russian olive, apple, and other fruit trees. Observed on cottonwood, ash, and elm in Scotts Bluff County on May 28, and on cottonwood in Cherry County on June 4.

WESTERN TENT CATERPILLAR (Malacosoma pluvialis Dyar)

Oregon. S. M. Dohanian (May 21): Found in varying intensities of abundance 1 mile north of Amity, Yamhill County, and continuing 9 miles south, attacking wild apple, wild rose, wild hazel, and alder. Reported as defoliating orchard, shade, and forest trees in and near Tillamook, Tillamook County, and shade trees and a 2-acre apple orchard in Mapleton, Lane County. (Det. by C. Heinrich.)

GYPSY MOTH (Porthetria dispar L.)

General. H. N. Bartley (June 18): Egg-hatching season is approximately 3 weeks earlier than in 1940, indicating one of the earliest on record. First observed hatching in Massachusetts on April 20, in New Hampshire and Vermont on April 21, and in Maine on April 26.

Maine. F. H. Lathrop (June 13): Very severe damage to untreated apple and other trees in York and "Twin" Counties was reported during May.

A. E. Brower (June): Abundant in places in southwestern Maine, defoliating shade trees and woodlands.

Vermont. S. S. Crossman (May 24): Examination of all growth surrounding a single egg cluster located last December in Lowell Township, Orleans County, in northern Vermont, gave negative results, indicating that infestation had originated from wind-spread larvae during the spring of 1940.

BROWN-TAIL MOTH (Nyctelia phaeorrhoea Donovan.)

Maine. F. H. Lathrop (June 13): During May very severe damage was caused to untreated apple trees in Auburn and vicinity. Reported as generally destructive to untreated trees in York County, where there is the greatest outbreak that has occurred for several years.

A. E. Brower (June): Much damage in southwestern Maine.

H. N. Bartley (June 18): Larvae first observed feeding at Poland on April 21. An apparent increase in infestation is reported along the central coastal region of Maine.

BAGWORM (Thyridopteryx ophemeraciformis Haw.)

Mississippi. C. Lyle and assistants (June 25): Specimens on cedar received from Claiborne County on June 14, and a heavy infestation was recently found in Hinds County.

Oklahoma. R. G. Dahms (June 22): Reported on evergreens from Comanche and Caddo Counties.

Texas. D. C. Farman (June 24): More numerous than usual.

WEBWORMS (Hyphantria spp.)

Virginia. A. M. Woodside (June 23): Webs of the fall webworm observed on cherry trees at Fishersville; damage is light.

Florida. A. H. Madden (June 3): Quite abundant on pecan in the vicinity of Quincy, western Florida.

Mississippi. C. Lyle and assistants (June 25): First larvae noted in Oktibbeha County on June 17; first observed in the Jackson district on June 20, and first reported from Clay County on June 10. Webs began to appear late in May and have become quite numerous on pecan and persimmon trees in the southeastern counties and on pecan trees in Harrison County. Light infestations observed in Attala County.

Missouri. A. C. Burrill (June 1): Small webs found on boxelder and mulberry in Jefferson City.

A GELECHIID (Dichomeris ligulellus Hbn.)

Minnesota. C. E. Mickel (May 24): Moth has been exceedingly abundant in flight in the vicinity of Saint Paul for the last 3 weeks. Unusual number of moths, which are apparently ovipositing. (Det. by J. F. G. Clarke.)

ASH

AN APHID (Prociphilus fraxinifolii Riley)

Utah. G. F. Knowlton (June 3): Ten percent of the foliage of a green ash tree was severely curled at Springville. On June 14 aphids were severely rolling green ash leaves on a few trees east of Corinne.

BEECH

A WOOLLY APHID (Phyllaphis fagi L.)

New York. R. E. Horsey (June 23): Beech woolly aphid numerous on the leaves of several varieties of European beech in an ornamental planting at Rochester on May 31.

BOXELDER

CECROPIA MOTH (Samia cecropia L.)

North Dakota. J. A. Munro (June 23): Reported as causing severe defoliation in the vicinity of Bismarck.

BOXELDER APHID (Periphyllus negundinis Thos.)

Utah. G. F. Knowlton (June 5): Very annoying, spotting cars parked under boxelders at Logan and various other localities in northern Utah.

CATALPA

CATALPA SPHINX (Ceratomia catalpae Bdv.)

Kentucky. W. A. Price (June 24): Highly parasitized specimen received from Lebanon Junction.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

Vermont. H. L. Bailey (June 23): Egg masses numerous at Winooski, Chittenden County, on June 6. Many newly hatched larvae.

New York. N. Y. State Coll. Agr. News Letter (June 9): Hatching rapidly in Dutchess County.

Pennsylvania. G. B. Slossman (June 17): Found generally throughout the Philadelphia area, attacking American, English, and allied species of elm. Numerous adults and egg masses present.

Ohio. E. W. Mendonhall (June 17): Present on elm trees in Dayton and vicinity, and some damage reported. Quite bad in different sections of Columbus, and elm trees have been considerably damaged.

Utah. G. F. Knowlton (June 6): Light injury to elms at Smithfield.

LARGER ELM LEAF BEETLE (Monocosta coryli Say)

Virginia. H. G. Walker and L. D. Anderson (June 27): Very abundant on elms in certain sections of Norfolk County.

MOURNING-CLOAK BUTTERFLY (Hemadryas antiopa L.)

Delaware. L. A. Stearns (May 24): Larvae submitted for identification were reported as feeding heavily on willow at Wilmington.

Utah. G. F. Knowlton (June 14): Larvae are stripping foliage from small Siberian elm trees 5 miles southeast of Ogden.

ELM CASEBEARER (Colcophora linosiponnella Dup.)

Michigan. E. I. McDaniel (June 11): Specimen received on June 6 from Grosse Ile.

APHIDS (Eriosoma spp.)

Minnesota. A. G. Ruggles and assistants (June 19): Very abundant and causing damage to elm trees in Cottonwood, Dakota, and Kanabec Counties.

Nebraska. H. D. Tate (June 20): The elm leaf curl aphid (E. americanum Riley) was submitted from Butler, Logan, Dodge, and Dawson Counties during the period May 26 to June 14. Observed on a number of trees in Lancaster County on May 22, and on elm on May 26 in Custer County.

Oklahoma. F. A. Fenton (June 24): The woolly elm aphid (E. rileyi Thos.) was found at Bristow on June 14.

Utah. G. F. Knowlton (June 21): American elm leaves seriously curled by E. americanum near Layton.

ELM COCKSCOMB GALL (Colophila ulmicola Fitch)

Illinois. C. L. Metcalf (June 26): Reported as ruining foliage of elm trees in numerous areas in north-central Illinois.

Wisconsin. E. L. Chambers (June 28): Very abundant in southeastern counties.

EUROPEAN ELM SCALE (Gossyparia spuria Mod.)

Connecticut. P. Wallace (June 4): Becoming so abundant that control measures are needed in North Branford, Hamden, and Cheshire, particularly on small trees and recent transplants.

Virginia. A. M. Woodside (June 23): Crawlers have been present on American elm trees at Waynesboro since June 17.

West Virginia. F. W. Craig (June 18): Found for the first time in Charleston. Previously known to be present in Wheeling and Chester.

Wisconsin. E. L. Chambers (June 28): Several new locations of infestation reported; increasing in untreated areas.

Utah. G. F. Knowlton (June): Several 6-year-old trees of Chinese elm at Springville damaged on June 3. Siberian elm was being attacked on June 11 at Farmington.

ELM LEAF MINER (Fenusa ulmi Sund.)

Rhode Island. B. Eddy (June 20): Heavy infestations observed throughout the State on June 6.

North Dakota. H. S. Telford (June 23): Very abundant on American elm during late May and early June.

ELM SAWFLY (Cinixia americana Leach)

Wisconsin. E. L. Chambers (June 28): Quite abundant in several towns in Waukesha and Dodge Counties.

Nebraska. H. D. Tate (June 20): An almost full-grown larva was collected on an elm tree in Lancaster County on June 2, and another specimen taken in the same county on June 12.

Kansas. H. B. Hungerford (June 12): Numbers have been increasing in southern Kansas for the last 3 years. For the last two seasons it has been serious at Coffeyville, and is attracting attention this year at Wichita.

HACKBERRY

NIPPLE GALLS (Pachypsylla spp.)

Rhode Island. B. Eddy (June 19): Hackberry nipple gall (P. celtidis-nanna Riley) infestation heavy on one ornamental tree at Cowesett.

Oklahoma. F. A. Fenton (June 24): P. celtidis-nanna and P. vonusta O. S. were very common on hackberry trees at Ardmore on June 13 and at El Reno on June 17. (Det. by E. P. Felt.)

HICKORY

A GALL (Phylloxera caryaecaulis Fitch)

New York. R. E. Horsey (June 23): A large native false shagbark hickory at Rochester was observed on June 20 to be almost dead, following a severe infestation of the hickory leaf stem gall, that has become worse every year. Other native hickories in this same area are infested.

LARCH

LARCH CASEBEARER (Coleophora laricella Hbn.)

New England. P. B. Dowdon (June 6): Considerable injury observed during the latter half of May. Infestations rather spotty but frequently

severe, and injury is decidedly more noticeable than for the last 2 or 3 years. Infestations particularly noticed in Washington County, Maine, Sullivan County, N. H., and Windham County, Vt. Isolated trees which have been severely browned have been observed in New Haven and Hartford Counties, Conn.

Vermont. H. L. Bailey (June 23): The larch case bearer is very abundant in Washington County, central Vermont.

Massachusetts and Connecticut. M. P. Zappe and A. DeCaprio (June): Very abundant on larches in Litchfield County, Conn. Ornamental larches in other parts of the State show some injury. Also noted in southwestern Massachusetts.

New York. R. E. Horsey (June 23): On June 20 a large American larch in an ornamental planting at Rochester was observed to be badly damaged.

AN APHID (Chermes strobilobius Kltb.)

New York. R. E. Horsey (June 23): Woolly larch aphid common on May 31 on American and European larches in an ornamental planting in Rochester.

LOCUST

LOCUST LEAF MINER (Chalepus dorsalis Thurb.)

Connecticut. M. P. Zappe (June): Many adults present on locust in towns along the Connecticut River.

Pennsylvania. G. B. Sleesman (June 14): One block of elms heavily infested in a nursery at Philadelphia.

Virginia. A. M. Woodside (June): Most of the larvae have left black locust leaves on trees at Augusta and Rockingham Counties. Adults are now feeding on foliage and causing light damage.

MAPLE

GREEN-STRIPED MAPLE WORM (Anisota rubicunda F.)

Virginia. A. M. Woodside (June 23): A few half-grown larvae observed on a silver maple at Fishersville; tree has been infested each year for several years. Damage is light.

GREEN FRUITWORM (Graptolitha antennata Walk.)

Indiana. J. J. Davis (June 23): Green maple worm, probably this species, ~~was~~ defoliating soft maple in a timber area in Jackson County, southern Indiana, on May 26. Ash and hickory also injured. Examination on June 5 showed that maple trees were beginning to recover. Larvae had left the trees and entered soil preparatory to pupation. What was probably this same species defoliated maples at Aurora, southeastern Indiana, on May 23.

MAPLE LEAF STEM BORER (Priophorus acéricaulis MacG.)

Rhode Island. B. Eddy (June 20): Observed on June 1 on sugar maple in Rumford.

WOOLLY ALDER APHID (Prociphilus tessolatus Fitch)

Ohio. T. H. Parks (June 25): Maple leaves sent in from Gallia County on June 23 bore specimens in such abundance as to cover the leaves with their white secretion.

Kentucky. W. A. Price (June 24): Specimens received on maple leaves from Hazel Green.

Georgia. T. L. Bissell (June 25): On May 28 scattered leaves of large Norway maple, with colonies, were received from Griffin. Quantities of wool and honeydew whitened the tree and ground. On May 27 it was reported from Atlanta.

Mississippi. C. Lyle (June 25): Specimens on maple were received on June 14 from Oktibbeha County.

BLADDER MAPLE GALL (Phyllocontes quadripes Shin.)

Ohio. T. H. Parks (June 25): Specimens received throughout June from widely separated localities.

Wisconsin. E. L. Chambers (June 28): Many infested leaves have been received.

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Tennessee. G. M. Bentley (June 25): Reported on May 31 on maples at Cleveland, Bralley County, and Dickson, Dickson County.

Ohio. E. W. Mendenhall (June 12): Abundant and causing light damage to elm and maple trees in Columbus.

Wisconsin. E. L. Chambers (June 28): Abundant in several towns in Manitowish County during June.

Wyoming. B. T. Snipes (June 21): Large poplars at Green River have been heavily attacked, but now show little damage.

OAK

A LEAF MINER (Cameraria sp.)

Alabama. J. M. Robinson (June 23): Oak leaf miner reported as active on oak at Birmingham on June 19.

EUROPEAN FRUIT LECANIUM (Leccanium corni Bouche)

New York. R. E. Horsey (June 23): Numerous on June 9 on a shingle oak in a nursery at Rochester.

PINE

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana Schiff.)

Connecticut. M. P. Zappe (June): Apparently more abundant than usual in northern parts of Connecticut on red and other pines, probably owing to rather mild winter.

Ohio. T. H. Parks (June 25): Specimens received on May 28 from Painesville, Lake County.

Michigan. E. I. McDaniel (June 11): Larvae were full grown at Farmington on June 6. Several specimens had pupated.

NANTUCKET PINE SHOOT MOTH (Rhyacionia frustrana Const.)

Virginia. L. A. Hetrick (June 2): Severe damage to a plantation of Pinus taeda in New Kent County by first generation. Many now in the pupal stage, but no adults noted. (Det. by C. Heinrich.)

Texas. R. K. Fletcher (June 11): Specimens reared from the tips of pine; found in a nursery at Poteet, Atascosa County. (Det. by C. Heinrich.)

WHITE-PINE WEEVIL (Pissodes strobi Peck)

Wisconsin. E. L. Chambers (June 28): Quite abundant on ornamental plantings in northern Wisconsin, as well as in white pine stands. Blue spruce found infested in some places.

A SCARABAEID (Anomala oblivia Horn)

Virginia. L. A. Hetrick (June 2): First adults noted in Middlesex County. Some injury from feeding of adults on basal portions of developing needles of Pinus taeda. (Det. by E. A. Chapin.)

WHITE-SPOTTED SAWYER (Monochamus scutellatus Say)

Rhode Island. B. Eddy (June 20): Heavy on Austrian pine on May 26 at East Greenwich.

SAWFLIES (Neodiprion spp.)

Massachusetts. J. V. Schaffner, Jr. (June 18): During the early part of June the larvae of pine sawflies were very common generally, and in some localities abundant on pitch and red pines throughout the eastern half of Massachusetts. In most cases the species observed were N. dyari Rohw. on pitch pine and a new species of Neodiprion on red pine. Control measures were necessary on many acres of red pine to prevent serious defoliation.

Virginia. L. A. Hetrick (June 2): Complete defoliation of stands of Pinus taeda is being caused in parts of King William, King and Queen, and Caroline Counties by N. americanum Leach. (June 20). This sawfly has also caused defoliation of the same tree on Chincoteague Island, Accomac County. Development of larvae is approximately 10 days later than in the vicinity of West Point, King William County.

INTRODUCED PINE SAWFLY (Diprion similis Htg.)

Michigan. E. I. McDaniel (June 11): Found feeding on Scotch pine on May 22 in Benton Harbor. Specimens received were half grown. On May 30 a heavy infestation occurred in a planting at East Lansing; a number of Austrian pines were stripped.

A SAWFLY (Itycorsia zappei Rohw.)

Pennsylvania. G. B. Sleesman (June 20): Two white pine trees in a nursery at Swarthmore were completely defoliated by a pine sawfly. A rather heavy infestation was found last year in a forest planting of pitch and rugho pines near Angelica.

PINE BARK APHID (Pineus strobi Htg.)

New York. R. E. Horsey (June 23): Numerous on June 18 on the trunk and branches of white pine in an ornamental planting at Rochester.

Wisconsin. E. L. Chambers (June 28): Observed as quite abundant in Oneida and Lincoln Counties.

PINE NEEDLE SCALE (Chionaspis pinifoliae Fitch)

Wisconsin. E. L. Chambers (June 28): Several reports of infestations received, and specimens sent in for identification.

Nebraska. H. D. Tate, (June 20): Specimens and reports of damage submitted from Sheridan County on June 12.

A SCALE (Aspidiotus ithacae Ferris)

Wisconsin. E. L. Chambers (June 28): Black pine leaf scale reported as abundant in several places in Sauk County.

PINE TORTOISE SCALE (Toumeyella murismaticum P. & M.)

Wisconsin. E. L. Chambers (June 28): Observed to be quite abundant in jack pine stands in Barron and Sawyer Counties.

SPRUCE

EUROPEAN SPRUCE SAWFLY (Gilpinia polytoma Htg.)

Maine. A. E. Brower (June 23): Since June 10 second- and third-stage larvae have been received from many places in the southern half of Maine, indicating early emergence and development.

Vermont. H. L. Bailey (June 23): Survey during week of June 16 in Wilmington-Marlboro-Dover area revealed a very light infestation. Larvae found at only 12 out of 52 points where beatings were made, and numbers were very limited at these points.

AN APHID (Pineus pinifoliae Fitch)

Vermont. H. L. Bailey (June 23): Spruce gall aphids are very abundant at Newfane, Windham County, southeastern Vermont. Dead adults, some with eggs, observed on white needles on June 7. Browned twigs and galls seen on almost all branches of red spruce in vicinity. Similar condition reported from Chester, Windsor County, about 25 miles north.

P. B. Dowden (June 6): Several stands of red spruce at Jacksonville, Windham County, observed today to be heavily infested. Galls were just opening, and winged aphids were very common.

EASTERN SPRUCE GALL APHID (Adelges abietis L.)

Wisconsin. E. L. Chambers (June 28): Abundant on one property in Fond du Lac County.

SPRUCE BUDWORM (Cacoecia funiferana Clem.)

Michigan. E. I. McDaniel (June 11): Specimens, which were infesting spruce, were received from Scottville on June 6.

SUMAC

SUMAC FLEA BEETLE (Elypharida rhois Forst.)

Virginia. L. A. Hetrick (June 2): Dwarf sumac defoliated in parts of Middlesex County. (Det. by H. S. Barber.)

Mississippi. C. Lyle (June 25): Specimens of what appeared to be larvae of the jumping sumac beetle were received from Lauderdale County on June 13.

Missouri. A. C. Burrill (May 29): Many larvae found attacking leaves of Rhus at Jefferson City. (Det. by W. H. Anderson.)

A FULGORID (Ormonis pruinosa Say)

Mississippi. C. Lyle (June 25): Adults and nymphs on sumac received on June 13 from Lauderdale County.

WILLOW

A LEAF BEETLE (Chrysomela lapponica L.)

Ohio. T. H. Parks (June 25): Spotted willow leaf beetles were very common on pussy willow during the early part of May. Infestation was general.

Indiana. J. J. Davis (June 23): Reported as abnormally abundant throughout the northern half of Indiana, most of the reports having been received during the first half of June.

Nebraska. H. D. Tate (June 20): Specimens infesting laurel-leaved willow in Douglas County were received on June 3.

EUROPEAN WILLOW LEAF BEETLE (Plagiodera versicolora Laich.)

New York. R. E. Horsey (June 23): Common on various willows on June 18, but not so severe as last year.

Pennsylvania. G. B. Slossman (June 17): Willows in the Philadelphia area in many instances have been partially defoliated.

POPLAR AND WILLOW BORER (Sternochetus lapathi L.)

Ohio. T. H. Parks (June 25): Exceedingly destructive to limbs of pussy willows during May and the early part of June.

A SATURNIID (Hemileuca novadensis Stretch)

Nebraska. H. D. Tate (June 20): Caterpillars found feeding on willow in Arthur County on June 6 were identified as the buck moth.

I N S E C T S A F F E C T I N G G R E E N H O U S E

A N D O R N A M E N T A L P L A N T S

CARROT BEETLE (Ligyrus gibbosus Deg.)

Virginia. H. G. Walker and L. D. Anderson (June 12): Reported as severely injuring several kinds of flowers at Onancock.

Nebraska. H. D. Tate (May 20): Several specimens were collected around lights in Buffalo County.

STALK BORER (Papaipema nobris nitela Guen.)

Wisconsin. E. L. Chambers (June 28): Reported as damaging dahlias, delphinium, tomatoes, and potatoes in the southern part of the State.

APPLE LEAF CRUMPLER (Mineola indigenella Zell.)

Mississippi. C. Lyle (June 25): Noted in Harrison and Clay Counties where Pyracantha and Japanese plum were infested on June 6 and 18.

North Dakota. H. S. Telford (June 23): Severely damaged a number of cottoncuster hedges lately in Fargo.

A CICADELLID (Homalodisca triquetra F.)

Texas. R. K. Fletcher (June 15): Extremely abundant on ornamentals, annuals, and perennials in Brazos County.

FOUR-LINED LEAF BUG (Poecillocapsus lineatus F.)

Ohio. T. H. Parks (June 25): Sent in from Akron in June with the statement that they were attacking flowers.

Wisconsin. E. L. Chambers (June 28): Reported as numerous from the southern part of the State.

SAJ JOSE SCALE (Aspidiotus perniciosus Comst.)

Indiana. P. T. Ulman (June 20): Young scales were very abundant on flowering cherry, ~~mountain~~ ash, and purple-leaved plum at Indianapolis; the progeny of a few adults almost completely covered shrubs 3 or 4 feet tall.

WHITE PEACH SCALE (Aulacaspis pentagona Tana.)

Virginia. H. G. Walker and L. D. Anderson (June 27): Numerous requests received during the last month from the Norfolk district for information on control on a number of plants, privet, mulberry, peach, etc.

North Carolina. C. S. Brinley (June 20): Reported on kudzu vine, near the roots, causing the leaves to wilt. It is quite common at Raleigh on privet hedges, sometimes killing them. The scale was also on chinaberry, mulberry and candytuft.

Mississippi. D. W. Grines (June 25): Was causing injury to a privet hedge in Sunflower County.

GLOBOSE SCALE (Locanium prunastri Fonsc.)

Pennsylvania. T. L. Guyton (May 6): Taken at Herndon. (June 16): Noted in Coatesville on peach.

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

Texas. R. K. Fletcher (June 24): Present in Harris County on May 31 and on shrubs in Kueces County on June 17.

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

New York. R. E. Horsey (June 23): Numerous on lilac and ash. Considerable on Elaeagnus sp., surrounding a badly infested ash tree. Noted in a plot of overgrown stock at Rochester on June 9.

AZALEA

AZALEA LEAF MINER (Gracilaria azaleocolla Brants)

District of Columbia. C. A. Weigel (May 29): Specimen infesting azalea in propagating houses at the National Arboretum in Washington. (Det. by J. F. G. Clarke.)

AZALEA LACEBUG (Stephanitis pyrioides Scott)

Mississippi. C. Lyle, et al. (June 25): Caused severe damage in the Meridian territory.

CHRYSANTHEMUM

CHRYSANTHEMUM GALL WIDGE (Diarthronomyia chrysanthemi Ahlberg)

Mississippi. C. Lyle (June 5): Specimens were received from Hinds County.

GREENHOUSE LEAF TIER (Phlyctaenia rubigalis Guen.)

New York. N. Y. State Coll. Agr. News Letter (June 9): Caused extensive damage in one plant house in Niagara County.

CHRYSANTHEMUM APHID (Macrosiphoniella sanborni Gill.)

New Jersey. M. D. Leonard (May 25): A number of small garden plants showed moderate infestation at Haddonfield.

COLUMBINE

COLUMBINE LEAF MINER (Phytomyza miniscula Gour.)

Wisconsin. E. L. Chambers (June 28): Abundant in the southern part of the State.

CRAPENYRTLE

CRAPENYRTLE APHID (Myzocallis kahawaluokalani Kirk.)

Mississippi. C. Lyle (June 25): Very heavy infestation observed on a fairly large crapenyrtle tree in Jackson County on June 11.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

Mississippi. C. Lyle (June 25): Specimens were received from Lee, Oktibbeha, and Washington Counties between May 22 and June 10.

FERN

FERN SCALE (Pinnaspis aspidistrae Sign.)

Alabama. J. M. Robinson (June 23): Reported as active on fern at Hurtsboro.

GLADIOLUS

BULB MITE (Rhizoglyphus hyacinthi Bdv.)

Mississippi. C. Lyle (June 25): Found on gladiolus bulbs from Leflore County and on narcissus bulbs from Lowndes County on May 28 and June 11.

HYDRANGEA

A LEAF ROLLER (Exartema ferriferanum Walk.)

Pennsylvania. L. G. Baurhofer (May 21): Three adults were reared from pupae found in curled and crumpled leaves of plant reported to be early hydrangea from Newville. It could not be determined whether the larvae had fed on leaves or had merely distorted them as a place for pupation. (Det. by C. Heinrich.)

IRIS

IRIS BORER (Macronoctua onusta Grote)

Pennsylvania. G. E. Slesman (June 18): Found generally throughout the Philadelphia area in nurseries. Both the flower and foliage have been attacked.

JUNIPER

JUNIPER WEEWORM (Recurvaria juniperella Kearf.)

Ohio. E. W. Mendenhall (June 1): Quite bad in juniper in Lake County, causing some damage.

Pennsylvania. G. B. Sloesman (June 12): Very rare in the Philadelphia area until this year. Junipers in a nursery at Chestnut Hill were heavily infested. There is some doubt as to the correct identification of this insect.

JUNIPER SCALE (Lecanium fletcheri Ckll.)

Indiana. J. J. Davis (June 23): Reported as abundant on ornamental junipers from Brownstown and Crown Point.

LILAC

LILAC BORER (Podosesia syringae Harr.)

New York. R. E. Morsey (June 23): Numerous in an ornamental planting at Rochester on June 20.

LILY

FULLER'S ROSE BEETLE (Pantonomus godmani Crotch)

Oregon. C. F. Doucette (April 4): Adults collected on lily foliage, at Harbor; shallow rounded notches had been eaten out.

PHLOX

PHLOX PLANT BUG (Lopidea davisi Knight)

Minnesota. A. G. Ruggles and assistants (June 19): Injuring phlox at Winona.

TARNISHED PLANT BUG (Lygus pratensis oblineatus Say)

Ohio. E. W. Mendenhall (June 24): Is doing considerable damage to phlox plants at Anelia, Clermont County.

PYRACANTHA

QUINCE LACEBUG (Corythucha cydoniae Fitch)

Maryland. C. A. Wiegel (June 23): Was doing considerable damage to Laland firethorn at Silver Spring. Was first observed during late May and early June. It caused much damage during 1940.

Mississippi. C. Lyle (June 25): Infested the leaves of all the pyracantha plants on the campus of Mississippi State College.

RHODODENDRON

LACEBUGS (Tingitidae)

Delaware. L. A. Stearns (June 3): Abundant at Rodney Square Park, Wilmington.

Ohio. E. W. Mendenhall (June 1): The lacebug, Stephanitis rhododendri Horv., was found on private plantings in New Philadelphia, Tuscarawas County.

ROSE

ROSE SAWFLY (Caliroa cethiops F.)

Wisconsin. E. L. Chambers (June 28): Present in many localities of the State.

Nebraska. H. D. Tate (June 20): Skeletonized rose leaves were received from Douglas and Nance Counties on May 29 and June 12, respectively. Observed on roses in Custer County on May 26, and also noted in Lancaster County on May 30 and June 1.

ROSE SHOUT BEETLE (Rhynchites bicolor F.)

Utah. G. F. Knowlton (June 14): Causing severe injury to roses in many gardens throughout the Payson area. Damaging garden roses in Farmington and Salt Lake on June 5.

POTATO APHID (Macrosiphum solanifolii Ashm.)

Utah. G. F. Knowlton (June): Aphids were less abundant on June 6 in northern Utah, although in several gardens this aphid was attacking the tip growth of roses. Damaging rose tip growth at Cedar City on June 21.

ROSE APHID (Macrosiphum rosae L.)

New Jersey. M. D. Leonard (May 20): Fairly abundant on several rose bushes observed at Ridgewood and Haddonfield.

A ROSE LEAFHOPPER (Typhlocyba sp.)

Wisconsin. E. L. Chambers (June 28): Abundant in southern part of the State.

LEAF-FOOTED BUG (Leptoglossus phyllopus L.)

Texas. R. K. Fletcher (June 24): Found on roses in Wilbarger County on May 26.

SNOWBALL

SNOWBALL APHID (Aphis viburnicola Gill.)

Utah. G. F. Knowlton (June 6): Seriously curled foliage on several bushes at Smithfield, but most of them have left the leaves.

BEAN APHID (Aphis rumicis L.)

Utah. G. F. Knowlton (June 6): Attacked blossoms and apical leaves of snowball bushes at Smithfield.

SPIREA

SPIREA APHID (Aphis spiraeicola Patch)

New Jersey. M. P. Leonard (May 20): Moderately abundant on several bushes observed at Ridgewood and Haddonfield.

Utah. G. F. Knowlton (June 3): Beginning to injure some spirea tips at Springville.

YEW

A MEALYBUG (Pseudococcus cuspidatae Rau)

Pennsylvania. T. L. Guyton (May): Collected at Harrisburg on Taxus sp. and reported as being very abundant on the host plant.

I N S E C T S A T T A C K I N G M A N A N D

D O M E S T I C A N I M A L S

MAN

MOSQUITOES (Culicinae)

Florida. J. B. Hull (May 31): A few mosquitoes (Aedes sollicitans Walk.) were observed on the island near Fort Pierce the last month.

Missouri. A. C. Durrill (June 2): First noticeable numbers of Culex spp. around Jefferson City after rains.

L. Haseman (June 25): A good many complaints are being received in central Missouri about mosquitoes, even in some cases where no outstanding breeding places are near.

Utah. G. F. Knowlton (June): On May 30 mosquitoes were very annoying to man on range land at south end of Cedar Valley, in Tooele County. On June 14 they were annoying at Corinne, Brigham, and Honeyville, mostly Aedes dorsalis Meig. On June 10 they were abundant and annoying at

Ogden and Kaneshville. On June 17 they were annoying man and livestock at Riverdale, Hooper, Sunset, Slaterville, and Utah Hot Springs. On June 18 A. dorsalis was extremely annoying to man in fields at Pleasant View and some at North Ogden and Tremonton.

Oregon. E. F. Knipling (May 31): First larvae of A. lateralis Meig. and A. vexans Meig. were found at Portland on May 9. Columbia River reached a maximum height of 9.6 feet during the week May 11-17. Peak of the flood is one of the lowest on record and was responsible for a very low population of flood-water mosquitoes.

SANDFLIES (Culicoides sp.)

Florida. J. B. Hull (May 31): Sandflies (Culicoides sp. ?) caused more annoyance during May in the vicinity of Fort Pierce than was reported prior to that time in 1941.

W. E. Dove (June 26): On June 15 surveying parties and workmen at Panama City were greatly annoyed by sandflies. C. mississippiensis Hoffm. and C. nolleus Coq. are the most common species. At Eglin Field sandflies are a problem in one area where a salt-marsh flat is near some of the barracks.

Illinois. C. L. Metcalf (June 26): Punkies were reported as seriously annoying man in the northeastern part of Illinois early in June.

CHIGGER (Entombicula alfreddugesi Oud.)

Missouri. L. Haseman (June 25): This pest made its appearance in central Missouri early in June.

A FLY (Phlebotomus sp.)

Texas. H. M. Brundrett (June 24): Blood-sucking flies have been very annoying in Uvalde.

AMERICAN DOG TICK (Dermacentor variabilis Say)

Massachusetts. C. H. Smith (May 31): Adults were more numerous on Martha's Vineyard during the month than in any May of which we have a record except 1939. Larvae and nymphs were only moderately abundant.

CATTLE

SCREWORM (Cochliomyia americana C. & P.)

Florida. J. B. Hull (May 31): During the branding and marking of 3,000 cattle in May at Saint Lucie only one case was found; and that in the navel of a calf.

Louisiana. D. C. Farman (June 20): Survey and reports indicate no infestations in Louisiana.

Texas. D. C. Parman (June): On June 6 trapping records at Uvalde indicated that this fly was advancing north and east from Cuero and building up rapidly. Two cases were treated at Bryan on May 29, about 3 months earlier than last year in eastern Texas. The trap at Silver Lake took 2,477 flies on June 1, by far the most ever trapped. By June 24, trap catches indicated a build-up of one of the highest general populations during the last 6 years on the western part of Balcones Escarpment, from Uvalde to Pecos County. Population continues very low on the lower Rio Grande and Gulf plains, and to the east of San Antonio. Overwintered infestation in southern Texas has spread to Houston and Mexico, east into Oklahoma, and north and west into New Mexico. Heavy infestations and death losses in most of western Texas.

New Mexico. D. C. Parman (May 26): Ranchman at Roswell stated today that he had a few cases, the earliest he had ever had.

Arizona. D. C. Parman (June 24): Many cases reported from along the Colorado River.

California. D. C. Parman (June 24): Many cases reported in the southern San Joaquin Valley, and from along the Colorado River.

HORN FLY (Haematobia irritans L.)

Florida. W. E. Dove (June 26): Averaged about 200 per animal at Panama City on June 25, ranging from only a few to as many as 2,000 on some animals.

Texas. D. C. Parman (June 24): The high population in May has practically disappeared at Uvalde, possibly owing to several severe rains.

Utah. G. F. Knowlton (June 5): Hornflies are annoying cows near Salt Lake.

Washington. F. C. Bishopp and E. F. Knipling (June 15): Causing much annoyance to livestock in the general area of Pullman and Spokane. Horses, as well as cattle, are infested. Number of flies per head on dairy and beef cattle varies greatly, from 100 to 1,000, partly owing to use of fly sprays.

California. F. C. Bishopp and A. W. Lindquist (June 20): Herd of beef cattle on a mountain pasture 40 miles east of Nice has 50 to 1,000 per animal averaging about 300.

STABLEFLY (Stomoxys calcitrans L.)

Florida. W. E. Dove (June 23): In northwestern Florida range cattle have only an occasional fly at this season of the year. Flies range from 5 to 10 per animal about dairies.

S. W. Simmons (June 15): At Sarasota there was a severe outbreak of dog flies extending in an area about 30 miles wide.

Illinois. F. C. Bishopp (June 22): Present in considerable numbers in the Loop in Chicago. Specimens observed in the windows of office buildings, show windows, outside of buildings, and along the streets.

Missouri. L. Haseman (June 25): Livestock in central Missouri attacked by moderate numbers of stableflies since the early part of June.

GULF COAST TICK (Amblyomma maculatum Koch)

Florida. W. E. Dove, et al. (June 26): On June 16 adults ranged from about 1 to 3 per animal among half the animals examined at Bonifay.

DEER FLIES (Chrysops spp.)

Delaware. L. A. Stearns (June 6): C. fuliginosa Wied. and C. flavida Wied. were abundant and annoying in areas along the Delaware Bay shore, particularly around Odessa.

Florida. W. E. Dove (June 21): Black flies have disappeared and are being replaced by C. vittatus Wied. in the vicinity of Panama City, western Florida.

Utah. G. F. Knowlton (June 14): Deer flies, especially C. fulvastra O. S. and C. discalis Will., are annoying to man and livestock in the Corinne-Honeyville area.

HORSE

HORSEFLIES (Tabanus spp.)

Florida. W. E. Dove (June 26): In northwestern Florida green heads were scarce about woods cattle on June 20, but T. americanus Forst. had increased to about five adults per animal. The small black tabanid is present in about the same number. Some animals showed as many as 50 at one time. A proctaceous wasp, Stictia carolina F., occurred in small numbers, averaging about 1 per animal. By June 25, these wasps averaged about 3 or 4 per animal.

Missouri. L. Haseman (June 25): The common brown species of horsefly has occurred in moderate numbers since the middle of June.

Utah. G. F. Knowlton (June 14): T. punctifer O. S. is annoying horses at Corinne and northwest of Salt Lake City.

BUFFALO GNATS (Sirulium spp.)

Washington. F. C. Bishopp and E. F. Knipling (June 17): Very abundant on horses and cattle near mountain streams near Leavenworth. Horses are particularly attacked.

THROAT BOTFLY (Gasterophilus nasalis L.)

Washington. F. C. Bishopp and E. F. Knipling (June 25): On June 14 and 15 horses in the vicinity of Spokane carried from a few to several hundred eggs each. On June 14 very few eggs were observed in the Pullman area, most horses carrying none.

NOSE BOTFLY (Gasterophilus haemorrhoidalis L.)

Washington. F. C. Bishopp and E. F. Knipling (June 25): Some sections of horses in the vicinity of Spokane on June 14 and 15 indicated presence of this fly, but no eggs nor adults were seen. Two full-grown larvae were collected on June 14 from a horse at Pullman. Ten other horses examined had none.

HORSE BOTFLY (Gasterophilus intestinalis Deg.)

Washington. F. C. Bishopp and E. F. Knipling (June 25): On June 14 and 15 horses in the vicinity of Spokane each carried from 10 to 500 eggs.

POULTRY

STICKTIGHT FLEA (Echidnophaga gallinacea Westw.)

South Carolina. W. C. Hottles and F. Sherman (June 24): Prevalent on poultry in the eastern part of the State.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

ANTS (Formicidae)

Indiana. J. J. Davis (June 23): Unusually abundant in lawns throughout the State, especially in the northern half.

Mississippi. C. Lyle and assistants (June 25): Reported as causing annoyance in houses and gardens in Bolivar, Coahoma, Harrison, Madison, Perry, Pike, Tunica, and Washington Counties; also reported from northeastern counties. Iridomyrmex humilis Mayr was reported from Monroe County. Specimens of the tiny black ant, Monomorium minimum Buckl., were received on June 12 and 21 from Bolivar County; M. pharaonis L. was received on June 19 from Harrison County, where they were causing annoyance in a dwelling. Specimens of the fire ant (Solenopsis xyloni McCook) were received from Bolivar County.

Missouri. L. Hasenhan (June 25): The common small household species are present in their usual numbers in central Missouri.

Utah. G. F. Knowlton (June): Observed on May 30 in a flower garden at Ogden. Found in several houses at Logan in June.

GERMAN COCKROACH (Blattella germanica L.)

Mississippi. C. Lyle (June 25): Reported from Monroe, Prentiss, and Tate Counties from May 21 to June 11.

Utah. G. F. Knowlton (June 5): Found infesting a restaurant at Ogden on May 31. Reported today as annoying in a kitchen at Logan.

California. P. Simmons (June 21): Reported as numerous in Fresno. Egg capsule and newly hatched young received. Numbers reported as estimated from 50 to 100.

ORIENTAL COCKROACH (Blatta orientalis L.)

Nebraska. H. D. Tate (June 20): Specimens received from Douglas and Franklin Counties on May 26 and 29, respectively.

BROWN-BANDED ROACH (Supella supelleotilium Serv.)

Mississippi. C. Lyle (June 25): Specimens received from Tippah County on May 29.

BROWN SPIDER BEETLE (Ptinus brunneus Duft.)

Oklahoma. F. A. Fenton (June 24): Found in grain on June 2 at Dartlesville.

DRUG STORE WEEVIL (Stegobium paniceum L.)

Ohio. T. H. Parks (June 25): Specimens received from Columbus with the statement that they were seriously injuring over-stuffed furniture.

CARPET BEETLES (Dermestidae)

Missouri. L. Haseman (June 25): A number of new houses in central Missouri have been seriously overrun by black carpet beetles (Attagenus niger Oliv.), apparently owing to wall insulation material, at least in some instances.

Nebraska. H. D. Tate (June 20): Insects submitted from Colfax County on June 2 with the report that they had been found feeding on woollen garments were identified as Anthrrenus verbasci L.

CONFUSED FLOUR BEETLE (Tribolium confusum Duv.)

Tennessee. G. M. Bentley (June 20): Found in accumulated waste flour and mill sweepings at Martin, Weakley County.

Nebraska. H. D. Tate (June 20): Discovered on June 6 in bran stored for grasshopper bait in Boyd County.

MEAL MOTH (Pyralis farinalis L.)

Utah. G. F. Knowlton, et al. (June 14): Severe infestation present in a remodeled apartment house at Payson. Grain had been stored in the house for several years before it was remodeled.

MEDITERRANEAN FLOUR MOTH (Ephestia kuehniella Zell.)

Tennessee. G. M. Bentley (June 20): Found in a flour mill at Martin, Weakley County, in accumulation of waste material.

Utah. G. F. Knowlton, et al. (June 14): Severe infestation at Payson, where grain had been stored previously.

RED-LEGGED HAM BEETLE (Necrobia rufipes Deg.)

South Carolina. E. W. Craig (May 24): Found flying about a house in Charleston. Concentration of insects found in a box in which hams had been stored. (Det. by E. A. Chapin.)

Mississippi. G. L. Pond (June 25): One adult found on June 5 in Jackson County.

WEEVILS (Sitophilus spp.)

Nebraska. H. D. Tate (June 20): Specimen of the true granary weevil (S. granarius L.) received on May 19 from Kimball County.

Wyoming. D. T. Snipes (June 21): Rice weevils (S. oryza L.) were present in a grain elevator at Thermopolis, having entered in loads of grain. Damage is light.

Utah. G. F. Knowlton, et al. (June 14): Granary weevil was among stored-grain pests present at Payson, where grain had been stored. On June 4 S. granarius was infesting stored grain at Beaver.

INDIAN-MEAL MOTH (Plodia interpunctella Hbn.)

Illinois. W. P. Flint (June 23): Adults very abundant in steel bins of shelled corn. Larvae are migrating and webbing grain surfaces.

Nebraska. H. D. Tate (June 20): Discovered on June 6 in stored bran in Boyd County.

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THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

THE SPECIES AND DISTRIBUTION OF GRASSHOPPERS
IN THE 1939 OUTBREAK

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The year 1939 was the sixth year in which the species of grasshoppers were recorded for the several States included in the annual grasshopper survey. Data for the 1934, 1935, 1936, 1937, and 1938 collections were published as supplements to the Insect Pest Survey Bulletin as follows: Volume 14, No. 9; volume 16, No. 5; volume 17, No. 3; volume 18, No. 6; volume 19, No. 4.

In 1939 22 States were included in this project and 131,605 specimens were collected in their typical grasshopper habitats. Fred E. Skoog, survey supervisor, made the identifications and much credit goes to him and to the rest of the survey unit of the grasshopper control project for the gathering of data concerning developments within the infestations during the active grasshopper season. The following summary of the general situation during 1939 is based on data gathered by this unit.

General Situation in 1939 from an Economic Standpoint

In 1938 unprecedented flights of Melanoplus mexicanus Sauss. in the Northern Great Plains area invaded western North Dakota, eastern Montana, Wyoming, the Black Hills section of South Dakota, western Nebraska, and the Red River Valley of Minnesota and North Dakota. Because of the 1938 flights, large areas of depleted range land in eastern Montana and the bottom land along the Big Missouri and Little Missouri Rivers, together with most buckbrush patches in the Bad Lands of western North Dakota, were heavily infested in 1939. One range land area north of Miles City, Mont., and extending west to the Musselshell River, averaged about 50 grasshoppers per square yard over 4,000 square miles. Between Williston and Walters Ferry, N. Dak., along the Missouri River bottom, populations of M. mexicanus ranged from 50 to 500 per square yard. The Bad Lands along the Little Missouri between North Roosevelt Park and Medora, N. Dak., flats in the river bottom and benches above the flats averaged 75 to 150 per square yard. Leading down to the Little Missouri River are long, dry creeks and innumerable steep draws from one to several miles long. Each draw or coulee had its quota of hoppers, averaging from 50 to 150 per square yard.

In all of the Black Hills area of South Dakota and Wyoming every mountain-hay meadow, pasture, and cropped field was severely infested with M. mexicanus hatching from eggs deposited by grasshoppers in flight. Populations ran as high as 5,000 per square yard and one observation showed all the buckbrush (Symphoricarpos) in 3 acres destroyed down to the roots by the grasshoppers, which had defoliated and decorticated it.

In eastern Wyoming and western Nebraska heavy infestations occurred in most of the favorable crop fields and especially in strip-farmed and stubbled-in grainfields.

In the northern Red River Valley, severe infestations of M. mexicanus occurred in pastures, waste areas, stump land, alfalfa fields, and other habitats. From these places they migrated into the crops. In south-central and southeastern South Dakota, southwestern Minnesota, and northeastern Nebraska severe local infestations of Melanoplus bivittatus Say, M. differentialis Thos. M. mexicanus, and M. femur-rubrum Deg. occurred. In the Hamill, S. Dak., district, the center of the disastrous 1931 outbreak, M. bivittatus hatched out in corn and sorghum stubble planted to small grain. Populations of 300 per square yard were not uncommon. In the buffalo and grama grass sod clumps along the edges of coulees, egg pods of M. differentialis averaged as high as 12 per square foot the first half of May at the same places where populations of M. bivittatus nymphs averaged 350 per square yard.

The area infested by Dissosteira longipennis Thos. included parts of 5 States; namely, southeastern Colorado, southwestern Kansas, Panhandle of Oklahoma, Panhandle of Texas, and northeastern New Mexico, with the major infestations in Colorado, New Mexico, and Texas. In these 3 States, during the 1939 spring egg surveys, a total of 75 egg beds were examined for eggs. The egg beds ranged in size from 1/2 acre to 200 acres, with an average of 15 acres per bed. The average egg-pod population ranged from 0.7 pod to 20 pods per square foot with an average of 5.8 pods per square foot for the 75 beds.

First-instar nymphs upon hatching numbered as high as 2,000 per square yard, with an average of 500. In many instances, within a week or 10 days after hatching, nymphs occupied 10 times the area of the egg bed. In Colorado it was estimated that the last-instar nymphs altogether covered 5 times as much area as the original egg beds and in New Mexico 10 times as much.

The population of M. mexicanus in the most severely infested areas of eastern Montana and western North Dakota were reduced to non-economic numbers in much of the area. This was accomplished largely by flights out of the area, although control measures may have reduced populations about 10 percent. In western Nebraska, western South Dakota, and eastern Wyoming, damage to small grain was reduced 50 percent by baiting. Infestations were reduced by flights out of the area and control measures until only local infestations remained. In the D. longipennis area populations of this species were reduced largely by

baiting operations to noneconomic proportions in Texas, to about 250 acres of egg beds in New Mexico, and to 1,910 acres of egg beds in Colorado.

Fall Egg Survey in 1939

The 1939 fall egg survey showed that areas of severe infestation had shifted considerably in the Melanoplus mexicanus area. In Montana the north-central counties were the most heavily infested. This was the area where the 1939 flights from eastern Montana terminated. In eastern Montana, from light to subnormal egg populations were found in areas most heavily infested during 1939. A large portion of eastern North Dakota was severely infested with M. mexicanus and M. bivittatus, while western North Dakota was comparatively lightly infested.

The eastern half and two-thirds of the southern half of South Dakota was also infested. From the Dakotas the infestation extended into the western third of Minnesota and the extreme northwestern part of Iowa. A large part of this whole area in these three States lies within the 20-inch rainfall belt. These infestations were a local build-up of M. differentialis, M. bivittatus, and M. mexicanus in the southern part. In the northern part it was largely M. mexicanus.

A spotted, severely infested area lay diagonally from eastern Nebraska across western Kansas, extending into eastern Colorado and the Panhandles of Oklahoma and Texas. In Kansas and parts of eastern Colorado Aeoloplus turnbullii Thos. was of recent economic importance. It proved a damaging species in 1938 but it is still an undetermined factor in the grasshopper outbreaks. M. mexicanus has become of increasing importance in both western Oklahoma Panhandle and northern Texas Panhandle. This is also true of parts of eastern Colorado, especially the northeastern part.

Infestations in western Nebraska were down, but not to the extent they were down in eastern Wyoming and western South Dakota. In Nevada and Utah there were severe local infestations, but for Idaho, Washington, and Oregon, there was a very small grasshopper problem. This was also true for most of Arizona, New Mexico, Oklahoma, Arkansas, Missouri, Illinois, Iowa, and Wisconsin. The northern half of the Southern Peninsula of Michigan had some severe local infestations. In California the Imperial Valley showed a severe infestation of M. mexicanus. There were also local spots of infestations of different species scattered in their usual areas.

Infestations of Dissosteira longipennis were about completely wiped out in Texas. There were two small areas in New Mexico and about 100 small egg beds in the southeastern quarter of Colorado.

For the entire area, severe infestations were limited to about seven or eight States at most, many of which are in heavily cropped areas. For this reason, they were of greater economic importance but probably provided a better opportunity for organized control.

Apparent Decrease of Melanoplus mexicanus in Relative Abundance

Melanoplus mexicanus egg pods were found during the egg survey in eastern North Dakota and north-central Montana in as great numbers as ever in the history of surveys, but collections of grasshoppers made in these States and others of the main M. mexicanus area showed a decided decrease in the relative abundance of M. mexicanus from 1938 to 1939. A verification of this is found in a comparison of the percentages of M. mexicanus in the collections made on range land and in all habitats for these years. These data are given in tables 1 and 1 A. On the range land there is a decrease of from 9 to 36 in the percentage, with an average of 14 percent for the entire area. For all habitats this decrease is from 7 to 17 percent, with an average of 10 percent. All this indicates a downward trend in the numbers of M. mexicanus, although it remains the most important species and was very abundant over large areas.

Table 1.--Decrease of relative abundance of Melanoplus mexicanus on range land

State	<u>M. mexicanus taken</u>		
	1938	1939	Difference
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Montana - - - - -	54	18	-36
North Dakota (eastern)- - -	32	18	-14
North Dakota (western)- - -	32	8	-24
South Dakota - - - - -	15	6	- 9
Nebraska - - - - -	29	16	-13
Wyoming- - - - -	29	20	- 9
Entire area - - - - -	28	14	-14

Table 1 A.--Decrease of relative abundance of Melanoplus mexicanus for a total of specimens collected in all habitats

State	<u>M. mexicanus taken</u>		
	1938	1939	Difference
	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>
Montana - - - - -	63	46	-17
North Dakota - - - - -	49	37	-12
South Dakota - - - - -	40	28	-12
Nebraska - - - - -	32	25	- 7
Wyoming - - - - -	36	26	-10
Entire area - - - - -	42	32	-10

Seasonal Population Trends of Grasshopper Infestations for
Different Crops and Habitats

Systematic observations were made throughout the 1939 season in the main grasshopper areas by special survey men, therefore, three of these areas will be discussed separately. On the basis of weekly estimates of the number of grasshoppers per square yard occurring in different crops and habitats, population trends have been traced for all of the nymphal period and part of the adult period, as shown in table 2. For most of the habitats the peak of nymphal population was reached by May 13. The peak of nymphal population for mountain-hay meadows was June 3, and for corn June 24 (table 2).

The trends of grasshopper infestations in the various habitats in Montana and North Dakota (northern M. mexicanus area) and in Wyoming, South Dakota, and Nebraska (southern M. mexicanus area) represent populations containing from 75 to 80 percent M. mexicanus. There was a rapid increase in populations from hatching to the peak and then a gradual decrease took place. The range land shown for Montana and North Dakota was, for the most part, depleted range of sage brush, Russian-thistle, pricklypear cactus, pepper grass (Lepidium), western wheat (Agropyron smithii), needlegrass (Stipa), and other grasses (Poa spp.). In the northern M. mexicanus area there was a second peak in small grain the week of July 1. This was probably due to migration of grasshoppers from destroyed fields and distant idle and depleted range lands into grainfields that had not been previously infested.

Table 2.---Seasonal population trends of grasshopper infestations for different crops and habitats--shown as the average number of grasshoppers per square yard occurring during each week from hatching time to adult survey.

Crop and habitat	May			June			July				August					
	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19
<u>Western North Dakota and eastern Montana</u> (northern <u>Melanoplus mexicanus</u> area):																
Range land - - - -	--	--	158	145	--	--	106	80	55	20	7	5	2	3	2	2
Margins - - - -	--	137	130	123	104	93	46	52	52	47	29	26	26	5	4	2
Idle land - - - -	73	110	115	111	69	51	55	31	31	27	0	--	--	-	0	0
Small grain - - - -	--	66	62	66	45	41	24	51	55	50	18	14	12	4	3	2
<u>Eastern Wyoming, Black Hills section South Dakota and western Nebraska</u> (southern <u>Melanoplus mexicanus</u> area):																
Mt.-hay meadow - -	--	--	113	358	605	--	--	185	21	--	27	10	--	--	-	-
Margins - - - -	605	610	313	360	275	238	150	120	125	63	35	30	--	--	-	-
Idle land - - - -	70	66	49	50	49	50	45	37	18	16	12	8	--	--	-	-
Alfalfa - - - -	96	112	103	106	88	86	75	64	39	37	21	21	--	--	-	-
Small grain - - - -	25	50	60	56	50	37	37	40	35	34	20	18	--	--	-	-
<u>Southeastern South Dakota, northeastern Nebraska, northwestern Iowa</u> (<u>Melanoplus bivittatus</u> and <u>Melanoplus differentialis</u> area):																
Margins - - - -	0	46	44	93	101	116	82	64	50	36	31	28	--	-	-	14
Alfalfa - - - -	0	21	24	36	32	30	26	24	28	21	20	17	--	-	-	7
Sweet clover - - -	--	0	90	88	46	41	40	35	34	24	19	12	--	-	-	14
Small grain - - - - (not stubbled-in)-	--	--	--	--	22	21	22	19	17	9	10	11	--	-	-	4
Small grain (stubbled-in) 1/-	0	17	16	51	43	47	36	34	27	14	12	11	--	-	-	4
Corn- - - - -	--	--	--	--	--	--	4	10	12	12	11	11	--	-	-	4

In the southern area, J. A. Gillett found that stubble fields deeply plowed were comparatively free from grasshoppers. Spring grain which had been disked or stubbled-in hastened hatching by removing the weed cover and fields stubbled-in had the most grasshoppers. At the time of hatching the wheat plants were from 2 to 4 inches high and very susceptible to total damage.

In table 2 there are also shown population trends for the main crops and habitats in the M. bivittatus and M. differentialis areas in South Dakota, Nebraska, and Iowa. Comparing trends in this area with those in the main M. mexicanus areas, one notes that the peak of population was reached more slowly, probably because of a slower rate in hatching. The greatest difference was in the margins, in which there was a big difference in the quantity of plant cover with taller and heavier sod and weed conditions in the M. bivittatus-differentialis areas.

Further study of table 2 shows that small grain stubbled into corn or sorghum had 2-1/3 times as many grasshoppers as did the grain sown in deep-plowed corn or sorghum stubble. It also shows that no grasshoppers appeared in the grain on plowed land until 3 weeks after they had hatched in the stubbled-in grain. The infestations in the grain on plowed land were caused by grasshoppers moving in from outside sources. Grasshoppers did not appear in the corn until the week of June 17, which was 5 or 6 weeks after hatching had begun. From the peak of the nymphal infestations to the adult survey on August 19, populations fell off 90 percent.

It was observed that within a day after alfalfa was mowed and raked most of the nymphs beyond the third instar in development had moved to the edge of the field or into adjacent crops. When new plant growth started the grasshoppers often moved back. Late in June, when the grain or alfalfa was harvested, the corn was invaded. Local movements consisting of shifting flights of M. bivittatus and M. differentialis began on a large scale about July 6 and continued into August.

Melanoplus mexicanus Area

This area embraced the eastern third of Montana, the western half of North Dakota, eastern Wyoming, the Black Hills section of South Dakota, and western, or Panhandle section of Nebraska. The survey supervisors working in this area were J. A. Gillett and F. E. Skoog. The following account is based on their observations.

Hatching of M. mexicanus began on April 25 and extended to June 1, with a general hatch the first week of May. In this area M. bivittatus was reported as hatching along with M. mexicanus.

For M. mexicanus and M. bivittatus it was known that in the spring additive amounts of daily maximum air temperatures above 60° F. would have to equal from 150° to 200° before hatching began. Therefore, progressive daily totals of the numbers of degrees the maxima went above 60° were kept for important stations scattered throughout the entire infested area.

This gave some advance knowledge of when to expect hatching. Table 3 shows the sums for the main stations in the M. mexicanus area.

Table 3.--Sums of Degrees of Daily Maximum Temperatures Above 60° in the Spring Before First Hatching of M. mexicanus 1/

Station	Date of first hatch	Sum of degrees
Valentine, Nebr. - - - - -	April 24	172
Newcastle, Wyo. - - - - -	April 28	150
Williston, N. Dak. - - - - -	May 1	170
Bismarck, N. Dak. - - - - -	May 1	196
Dickinson, N. Dak. - - - - -	May 1	194
Grand Forks, N. Dak. - - - - -	May 6	178
Lead, S. Dak. - - - - -	May 13	160

1/ M. bivittatus was reported hatching along with M. mexicanus.

The accumulative temperatures for Grand Forks, N. Dak., amounted to 114° on and including May 2 and as yet no hatching had been reported for that area. It was predicted that hatching would take place in this area within the next 3 or 4 days, provided maximum air temperatures rose above 70°. Hatching did take place at this time as shown in table 3. During the 3 days after May 2, 64° more above 60° maximum were added to the total of 114°, making a total of 178° before hatching was observed.

In the Black Hills area, hatching was from 7 to 25 days later than in the open-plains areas. This was due to lower temperatures and more moisture. First hatching was estimated to be about May 13, because on May 19 a collection of nymphs showed 60 percent first instars and 40 percent second instars. By May 13 daily maximum temperatures above 60° had totaled 160°. It is believed that this gives a rough method for predicting the date when hatching will begin.

For the whole area, fields of small-grain stubble covered with Russian-thistle were the most common source of infestations for M. mexicanus. Other sources were idle land, pure stands of alfalfa, native grass-hay meadows, depleted range land, buckbrush draws, river bottom, and bench. Remarkably few M. mexicanus were present on good grama-grass range land. This was especially noticeable where the grama grass grew up to the edge

of buckbrush patches or draws containing Poa or western wheatgrass, which had several times as many hoppers as did the grama grass. Nymphal populations in the fields ranged from 25 to 300, with occasional concentrations of 1,000 to 5,000 per square yard.

Adults appeared by May 30 in the southern area (Wyoming, South Dakota, and Nebraska), by June 15 from 5 to 35 percent were adult, and by the first of July from 75 to 95 percent were adult. Local flights were observed in Nebraska from June 14 to 21. One June 20 a major flight began to develop on the large range area north of Miles City, Mont. From then on flights throughout the entire area at first increased in size and frequency and then continued throughout July and August and into September.

The greatest sources of flights were the north half of the Black Hills, in Lawrence and Pennington Counties, S. Dak., west-central Nebraska, (made up of Box Butte, Sioux, Morrill, and Scotts Bluff Counties), and southeastern Wyoming (composed of Niobrara, Goshen, Laramie, and Platte Counties). In the northern area the main sources of flight were the Missouri and Little Missouri watershed in western North Dakota, including the bottom lands in the Bad Lands and along the river courses proper, and the 4,000-square-mile range area in Garfield County north of Miles City.

Flights from the Black Hills section were mostly toward the northwest; those from western Nebraska and southeastern Wyoming were to the south and southwest into northwestern Kansas, northeastern Colorado, and the counties along the northeastern front of the mountains in Colorado. The main flights in western North Dakota and eastern Montana were west and northwest. They terminated in the north-central counties of Montana.

Owing largely to emigration of the adults by flight, comparatively few eggs were laid in the main area in which the M. mexicanus infestation of 1939 developed. Mr. Gillett prepared a table showing the differences in his area between the average ratings resulting from the fall egg surveys of 1938 and 1939.

Table 4.--Difference in average ratings in fall egg surveys, 1938 and 1939

Area	Average ratings in fall egg surveys	
	1938	1939
Western Nebraska - - - - -	2.9	2.1
Western South Dakota - - - - -	2.8	1.8
Eastern Wyoming - - - - -	3.1	1.9

Mr. Skoog, in the northern area, prepared a table showing the differences between the average number of egg pods per square foot in the spring and fall egg surveys of 1939 in his area.

Table 5.--Comparison between egg pods per square foot, spring and fall surveys, 1939

Area	Average number pods per square foot	
	Spring 1939	Fall 1939
Eastern Montana - - - - -	2.60	0.16
Western North Dakota - - - - -	6.45	.36

Both of these tables indicate a great reduction in the infestations in the main M. mexicanus area.

Second Generation of Melanoplus mexicanus

Early in August 1939 a second generation of M. mexicanus began hatching in western Kansas, the Oklahoma Panhandle, the northern part of the Texas Panhandle, and in southeastern Colorado. In this region, the first generation was of minor importance in Texas but increased in numbers northward until it comprised half the grasshopper population in parts of Kansas and Oklahoma. In the Oklahoma Panhandle the first generation was reduced by baiting operations to an average of less than 5 per square yard in marginal areas and 1 per square yard in fields. The light residual population laid many eggs, of which at least 95 percent hatched. The second generation resulted in a surprising increase in population and proved more important than the first generation, with respect to crop damage. From a normal-to-light spring infestation there developed a light-to-threatening second generation, and from eggs of the second generation a threatening-to-severe infestation developed in the spring of 1940.

Melanoplus bivittatus and Melanoplus differentialis Area

This area included southeastern and south-central South Dakota, extreme southwestern Minnesota, western Iowa, northwestern Missouri, and eastern Nebraska. Very few observations were made in Missouri because of the low grasshopper populations found there. The survey supervisor for this area was D. R. Lindsay, and the following discussion is based on his notes and observations.

There were three major species involved in this area—Melanoplus bivittatus, M. differentialis, and M. mexicanus, named in the order of their importance. Melanoplus femur-rubrum was also abundant in places. Both M. differentialis and M. femur-rubrum hatch 2 or 3 weeks later than the other two, and this in itself prolonged the hatching period in this area, which began the first week of May and continued to August.

In eastern Nebraska about 80 to 90 percent of the infestations came from sweetclover fields and unplowed cornfields. Small grain sown in corn or sorghum stubble, which had been harrowed over or left standing, proved an important source of infestations for M. bivittatus. In some instances populations of 300 per square yard developed in these places. Other sources of infestations were the roadsides and other field margins, soddy banks of coulees, and alfalfa fields. The distribution of the species in this area is described by Lindsay as follows: "In west-central Iowa the infestation was predominantly M. bivittatus, with occasional areas where M. mexicanus was dominant; in northwestern Missouri the infestation was negligible; in eastern Nebraska M. bivittatus predominated in some localities and M. differentialis in others. Later, M. differentialis became the most important in all but the northeastern counties. The M. bivittatus infestation in Nebraska extended into south-central South Dakota, notably in Tripp, Gregory, and Charles Mix Counties, thence eastward in reduced numbers, where it was combined with M. differentialis. Just north of these counties there was a general infestation of M. mexicanus. In southwestern Minnesota only one small infestation was encountered, occurring in Rock County and first consisting of M. bivittatus and M. differentialis mixture, but following a severe hail and hatch of M. femur-rubrum it became predominantly M. mexicanus and M. femur-rubrum. The latter species also increased in importance in northwestern Iowa."

Dissosteira longipennis Area

This area included southeastern Colorado, southwestern Kansas, Panhandles of Oklahoma and Texas, and the northeastern part of New Mexico. The survey supervisors for this area were L. A. Spain and D. K. Scharff, and the following discussion is based on their observations.

Mr. Spain reports: "That portion of the Great Plains embodying the D. longipennis outbreak might be considered as an area of considerable diversity, from the aspect of topography, and as one of much similarity, from the standpoint of natural vegetation. For the most part, the terrain is slightly rolling, short-grass rangeland, called the plains grassland, varying from level plains on the east to the more rough hill land with buttes and mesas on the west. Soils are predominantly sand and clay loams with very little organic matter. In the longipennis region of the short grass or plains grassland, the natural grass is principally a mixture of grama (Bouteloua gracilis) and buffalo grass (Buchloe dactyloides). Wire grass (Aristida longiseta) appears in the flora in the eastern edge of the D. longipennis area, and along the western edge admixtures of ring grass (Muhlenbergia torreyi) and junegrass (Koeleria cristata) appear. Toward the southwest in New Mexico black grama (Bouteloua eriopoda) becomes more and more abundant until it is the dominant species at the margin of the infestation. Other grasses of a more or less local nature contribute variation to the flora but the general dominance of grama-buffalo grass is characteristic of the D. longipennis area. It is estimated that more than 90 percent of the D. longipennis infestation of 1939 hatched from range and pasture land where these short grasses were dominant.

The extent of farming in the area is variable by counties and involves from nearly 15 percent of the land in some counties to 75 percent or more in others, with an estimate of about one-fourth or one-third of the D. longipennis area under cultivation. Wheat and grain sorghums are prevalent and the following is a list of the chief crops: (1) Small grains, principally winter wheat with small acreages of barley and spring wheat; (2) sorghums, principally grain sorghums, including Kafir corn, Milo maize, Sudan grass, and cane; (3) corn; (4) legumes. Along the rather narrow creeks and strips of river-bottom land where irrigation is possible, there are small fields of alfalfa, sweetclover, peas, and beans, also small grains, corn sorghums, melons, and vegetables. Irrigation is very limited, as streams are not permanent in most of the southern part of the D. longipennis area and over much of the whole area. The Arkansas River and several of its tributaries provide irrigation water for adjacent land in Colorado and Kansas. This is the principal irrigated section of the D. longipennis area. Most of this area has received an average annual precipitation of 15 to 20 inches and in recent years of abnormal drought was included in the well-known 'dust-bowl.'

"Although known as the D. longipennis area, in honor of the most important species, Melanoplus differentialis, M. mexicanus, M. bivittatus, Aeoloplus turnbulli and other species were the dominant grasshoppers in crop land. A second generation of M. mexicanus became sufficiently numerous to warrant special attention late in the summer and in the fall. Eggs of D. longipennis were found in all environments common to grasshopper oviposition. However, egg beds of this species were not scattered promiscuously, for it is estimated that more than 90 percent of the egg beds occurred in range and in pastures covered with buffalo and grama grass. There were a few beds in tall native grass and weedy grassland, several in small grain, sorghum, and corn stubble, and some in abandoned land. On typical beds in buffalo-grama range, egg pods were placed around the edges of grass plants, and in the intervening bare spots between plants well below the surface of the soil.

"A total of 75 D. longipennis egg beds were examined during the spring of 1939 in Colorado, Texas, and New Mexico. The following table shows the average results of the examination of typical beds in the heavily infested portion of the area.

Table 6.--D. longipennis egg beds surveyed in the spring of 1939 in Colorado, New Mexico, and Texas

State	Beds surveyed	Average size of beds	Pods per square foot	Reduction by predators
	<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Percent</u>
Colorado - - - -	38	25	5.3	9.6
New Mexico - - -	23	5	6.3	15.0
Texas- - - - -	14	5	6.6	10.0

"Egg beds ranged in size from 1/2 acre to 200 acres, with an average of approximately 15 acres per egg bed for the D. longipennis area. The average egg pod population of 75 beds ranged from 0.7 pod to 20 pods per square foot, with an average of nearly 5.8 pods per square foot. The first hatching dates for D. longipennis, together with the average duration of the hatching period, are shown for each of the major D. longipennis States in table 7.

Table 7.--Dates of hatching periods for New Mexico, Texas, and Colorado in 1939

State	First hatch	Hatching complete	Average duration of hatching period
			<u>Days</u>
New Mexico - - -	April 21	June 5	23
Texas - - - - -	April 22	May 30	23
Colorado - - - -	May 2	June 1	18

"The duration of the hatching period for individual beds ranged from 11 to 30 days. The shorter average hatching period of 18 days for Colorado compared with 23 days for New Mexico and Texas is attributed to weather. Eggs began to hatch at a number of beds in the two last-named States as the result of an unseasonably warm spell during the latter part of April; then followed cool weather in the first half of May, which prolonged the hatching period. Hatching was deferred on a number of beds in Colorado by the same cool spell until warm weather prevailed, when a quick hatch resulted. Egg beds at lower altitudes, in warm exposures, began to hatch 19 days earlier than did some of the beds situated less favorably on high mesas. An egg bed in Lincoln County, Colo., which had both a southern and a northern exposure, exemplifies the effect of a favorable location. When hatching was complete on the southern slope of this bed, only 55 percent of the eggs had hatched on the northern exposure.

"The proportion of viable eggs for all the beds was large, and the few eggs which did not hatch constituted only 1 percent or less. The length of the nymphal period for D. longipennis is shown in table 8. The time interval is measured from the first hatching to the first appearance of adults.

Table 8.—Summary of the length of the nymphal period for New Mexico, Texas, and Colorado, in 1939

State	First hatch	First adults	Length of nymphal period
			Days
New Mexico - - -	April 21	June 5	45
Texas - - -	April 22	June 5	44
Colorado - - -	May 2	June 15	44

"D. longipennis persisted in bands throughout the nymphal period, except in cases where populations were too low (either originally or as a result of control) to become gregarious. Populations of less than 5 per square yard were not observed to band together in Texas and New Mexico, whereas in Colorado populations of less than 20 per square yard were not observed to band together. This discrepancy probably represents the population range wherein D. longipennis may or may not become gregarious, depending on such factors as nymphal size, vegetation, topography, or weather. First-instar nymphs occurred in bands averaging 500 per square yard but sometimes numbering as many as 2,000 per square yard. A gradual dispersal and thinning in numbers took place during the whole of the nymphal period until the last instar, when the average per square yard ranged from less than 50 to 150. Nymphs remained on their hatching grounds more than a week in some cases, and on other beds left immediately after hatching. Usually migration began near the end of the first week of hatching, and the spread was rapid. First-instar nymphs traveled about 3 feet per minute, third-instar nymphs from 6 to 12 feet per minute, and the late instars 10 feet or more per minute. Bands of nymphs could be found moving in all directions during a single day and often within one locality. Because of repeated changes in direction, bands did not attain great distances, but some were known to have reached a distance of 2 to 3 miles from the place of hatching. Very often by the end of a week or 10 days after hatching began, nymphal bands occupied 10 times the area of their egg beds. Nymphs from a 1/2 acre bed in Texas spread over 30 acres in less than 2 weeks. Notwithstanding good control, the last-instar nymphs in Colorado were estimated to cover 5 times as much area as the original egg beds, and in parts of New Mexico fifth-instar nymphs covered nearly 10 times the area of the egg beds.

"The first adults D. longipennis in 1939 were found on June 5 in New Mexico and Texas, and on June 15 in Colorado. By July 1, in the first two States and by July 15 in Colorado, populations were more than 98 percent adult. New areas became infested as the moving bands of nymphs became adults. Nymphs in the process of molting were left scattered behind the bands and the newly emerged adults soon flew away. During the month following the first adult emergence, D. longipennis adults showed no evidence of the gregariousness exhibited by the nymphs, and dispersed on wing.

This period is described as the solitary period.^{1/} First flights were short, low, and rather local, whereby adults moved from 25 to several hundred yards at a time, largely at an altitude of less than 50 feet. High dispersing flights followed, and the lights of many towns in the area attracted 'hoppers from the sky at night. As the adults began to congregate, short low flights were again observed and concentration points became sites for potential egg beds. The activity of adults from emergence to oviposition is summarized below.

Table 9.--Summary of adult activity in Colorado, New Mexico, and Texas in 1939

State	First adults	Solitary period	First congregation	First Oviposition
Colorado - - - -	June 15	31 days	July 16	August 1
New Mexico - - -	June 5	30 days	July 5	July 17
Texas - - - - -	June 5	June 5 on	None	August 10 (?)

"During the time designated as the solitary period, adults became so widely scattered and evenly distributed they could not be found more numerous than 1 per square yard, except in a few small areas. An area approximately 10 by 15 miles near Tucumcari, N. Mex., which in May had many roving bands of D. longipennis, contained on July 5 an average of 1 adult per square yard, and not more than 2 per square yard were found in any part of the area. Very few locations in Texas contained as many as 1 per square yard, and for the most part, adults averaged less than 1 per square rod. Oviposition began in 12 to 15 days after the adults began to congregate. D. longipennis failed to congregate in Texas, apparently because of the extremely low population, and remained scattered at the rate of less than 1 per square yard throughout the oviposition period. In Texas by August 10 the ovarian development of females indicated that oviposition had started. Long flights practically ceased when oviposition got under way. The average population of adult bands of D. longipennis was 20 per square yard. The results of the 1939 fall egg survey are summarized in the following tables.

^{1/} The term "solitary period" is offered by L. A. Spain to designate that portion of the adult period which precedes the usual congregation for oviposition. During this time the adults are scattered and do not show gregarious tendencies.

Table 10.--Egg beds of *D. longipennis* in Colorado and New Mexico in 1939

State	Egg beds	Average Size egg beds	Pods per square foot	Predators per square foot	
				Bee fly	Blister beetle
	<u>Number</u>	<u>Acres</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>
Colorado - -	98	19.5	4.5	3.0	0.3
New Mexico -	101	2.5	5.6	.7	.3

Table 11.--Estimated infestation of *D. longipennis* in Colorado and New Mexico in 1939

State	Egg beds	Area of egg beds	Total area infested	Questionable area
	<u>Number</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Colorado - -	98	1910	164,000	137,700
New Mexico -	101	250	30,000	7,000

"Egg pod counts averaged from less than 1 per square foot to more than 17 per square foot. The 98 egg beds of Colorado were found in Otero, Lincoln, Las Animas, Pueblo, Cheyenne, and Adams Counties. In New Mexico the 101 egg beds were found in Quay and DeBaca Counties. The total infested area includes all the area over which the grasshoppers ranged during the laying season. The questionable area includes acreage in which *D. longipennis* was present during part of the laying season, but where no egg beds were found. Baca, Bent, Pueblo, Cheyenne, and Adams Counties of Colorado, and Chaves County, N. Mex., had questionable area."

Melanoplus occidentalis Area

In Nye and Lander Counties, Nev., there occurred an outbreak of *Melanoplus occidentalis occidentalis* Thos. The situation was covered by G. M. Shogren, who submitted the following information: "Prior to 1939 the range grasshopper (*M. occidentalis occidentalis*) was not known to exist in Nevada. Inquiry by the writer of local residents as to past infestations brought forth no reliable information. Some local ranchers seemed to remember a heavy grasshopper infestation on the range about 30 years ago. Indians say that 60 to 70 years ago a heavy range infestation occurred for two summers. The range was damaged heavily at this time and all deer left the country to seek grazing elsewhere. In July 1938, a flight of grasshoppers, presumably *M. occidentalis occidentalis*, settled over the buildings and fields of the Turner ranch in Big Smoky Valley. The next morning the 'hoppers took flight into the nearby hills and were not observed again by Mr. Turner. Late in the summer a flight of

grasshoppers appeared near Wall Canyon, 1 1/2 miles south of the H. Ott ranch. It is assumed that heavy egg deposition took place in this area, for in the spring of 1939 grasshopper nymphs were first observed here, and from all indications the infestations for 1939 arose from egg beds laid down in the vicinity of Wall Canyon. The flight that appeared at the Turner ranch in all probability was the same one that settled near Wall Canyon, as the two areas are only 8 to 9 miles apart. Information and observations made led the writer to believe that only one band of grasshoppers was present in Big Smoky Valley in 1938. Eggs are reported to have hatched during the second and third weeks in March, the spring of 1939 being an early one. The nymphs were very active and it was reported that they began to migrate during the early instars. Adult grasshoppers were observed on May 13 (10 percent of population) and on May 21 from 95 to 98 percent of the known populations were winged. Mating was reported on May 20, and egg laying observed to be taking place on June 1. Egg laying observed on June 1, was only a very small percentage of the local population. Egg laying was well under way by June 21. Egg deposition continued until the latter part of July, at which time very few surviving adults were found, natural mortality having reduced populations to this degree.

"The 1939 infestation spread from an area 2 by 3 miles in size on the low hills and knolls between Pablo and Wall Canyons to a total area of 90 by 15 miles. This latter area extended from Willow Springs maintenance station, Nye County, in the south, to 20 miles north of Route 50 in Lander County. In the 1939 fall egg survey there were 11 areas having a combined acreage of egg beds of 19,000 acres. Egg laying began around June 1 and continued until late in July. Most of the oviposition took place between 9 a.m. and 12 noon. Egg beds were fairly well defined and in most cases quite concentrated. The number of pods found per square foot ranged from less than 1 to 285. A distinct preference for gravelly and rocky soil was shown in that all egg beds were in this type of soil. The tops of knolls, low hills, alluvial fans at canyon mouths and sides of canyons were the topographic sites chosen for egg deposition; spots without southern or western exposures of good drainage features were avoided for egg deposition."

Predators and Parasites in Relation to the 1939 Outbreak

During the egg survey in the spring of 1939 estimates were made of the damage done to eggs by egg predators and parasites. The average reduction of good eggs by predators amounted to 35 percent in eastern Wyoming and western Nebraska and South Dakota. Bee-fly larvae were the principal predators, with blister beetles second and carabids a minor third. In eastern Montana and western North Dakota the egg reduction amounted to 20 to 75 percent and was due mainly to the work of bee flies.

In southeastern South Dakota, northeastern Nebraska, and western Iowa, blister-beetle larvae were more important than the bee fly. In places of greatest egg reduction, carabid larvae outnumbered the blister beetle from 2 to 8 times. Mites, Trombidium sp., were also found throughout this

area, sometimes as many as 10 or 12 per pod. Later it was believed that some reduction in population was brought about by the effect of 10 to 36 seed mites on the wing pads of many of the nymphs, preventing proper molting.

The egg parasite Scelio calopteni Riley was also numerous in this area. Many counts of unhatched, hatched, and parasitized pods were made between May 26 and June 15. The amount of parasitization ranged from 1 to 60 percent, and for the whole area it averaged at least 5 percent.

In the Dissosteira longipennis area of Texas and New Mexico bee-fly, blister-beetle, and carabid larvae were seldom found, and the reduction of egg pods by these predators was less than 1 percent. Birds, principally western horned larks, and rodents--rats, mice and gophers-- were believed to have destroyed 15 percent of the D. longipennis pods in the egg beds of New Mexico and 10 percent in Texas. Western horned larks and lark buntings consumed about 5 percent of the first-and second-instar D. longipennis in Texas. After 85 to 95 percent of the hoppers had been destroyed by bait, these two birds destroyed up to 100 percent of the residual populations.

In Colorado the insect, bird, and mammal predators reduced the number of egg pods of D. longipennis 11 percent. Bee-fly larvae were the most important insect egg predator, while western horned larks destroyed only 1 percent of the eggs. During oviposition the swainson, red-shouldered and rough-legged hawks gathered in the vicinity of the egg beds, feeding on the adult grasshoppers. On 1 egg bed in 4 days' time, they reduced the adult population from 10 per square yard to less than 1 per square yard. Pellets of indigestible matter regurgitated by the hawks, showed as many as 15 to 19 grasshoppers per pellet. The fecal matter of skunks and coyotes showed that these 2 animals for a short period fed almost exclusively on D. longipennis adults. Sarcophagid parasitization averaged 2 to 3 percent during the adult period in the D. longipennis area. The cumulative effect probably exceeded the average parasitization because of at least 3 generations of sarcophagids occurring in this area. In the Melanoplus mexicanus area, 4 to 25 percent of the grasshoppers contained maggots of the flesh flies. Although conditions were ideal, especially in the M. mexicanus area, there was little or no reduction of numbers due to fungus.

ARKANSAS

This is the third year in which collections have been made in this State. Two hundred ninety-four were specimens taken in 5 habitats and 10 species were included in the collections. Melanoplus differentialis is the dominant species, with M. mexicanus second in numbers. Populations were mostly of noneconomic importance, and only 6 counties were listed as needing some control.

ARKANSAS

Distribution by species of 294 specimens collected in Arkansas, expressed in percentage of total number collected in each habitat

Species	Corn	Alfalfa	Lespedeza	Grassland	Soybeans	Total Specimens	Percentage of grand total
Ageneotettix deorum Scudd.	--	--	1.07	--	--	1	0.34
Campylacantha o. olivacea Scudd.	--	--	3.22	6.90	--	7	2.38
Chortophaga viridifasciata Deg.	--	6.25	4.30	1.72	--	9	3.06
Hippiscus rugosus Scudd.	8.33	--	5.38	--	--	6	2.04
Melanoplus bispinosus Scudd.	--	--	7.53	--	--	7	2.38
M. differentialis Thos.	16.66	12.50	12.90	32.76	56.72	79	26.87
M. femur-rubrum Deg.	--	6.25	13.98	17.24	14.92	37	12.58
M. mexicanus Sauss.	--	39.06	17.20	3.45	14.92	53	18.03
Orphulella speciosa Scudd.	--	3.12	1.07	17.24	--	13	4.42
Schistocerca a. americana (Drury)	75.00	3.12	4.30	1.72	1.49	17	5.78
Nymphs	--	29.69	29.03	18.96	11.94	65	22.11
Total specimens per environment	12	64	93	58	67	294	--

ARKANSAS

The percentages of individuals of the various species present in Arkansas, arranged according to crops infested, are summarized as follows:

Corn Percent

Schistocerca a. americana--	75
M. differentialis-----	17
Hippiscus rugosus-----	8
Other species and nymphs---	0

Alfalfa Percent

1. Melanoplus mexicanus-----	39
2. M. differentialis-----	13
3. Chortophaga viridifasciata-	6
4. M. femur-rubrum-----	6
5. Orphulella speciosa-----	3
6. Schistocerca a. americana--	3
7. Nymphs-----	30

Lespedeza

Melanoplus mexicanus-----	17
M. femur-rubrum-----	14
M. differentialis-----	13
M. bispinosus-----	8
Hippiscus rugosus-----	5
5 other species and nymphs--	43

Grassland

1. Melanoplus differentialis--	33
2. M. femur-rubrum-----	17
3. Orphulella speciosa-----	17
4. Campylacantha o. olivacea--	7
5. M. mexicanus-----	3
6. 2 other species and nymphs-	23

Soybeans

Melanoplus differentialis--	57
M. femur-rubrum-----	15
M. mexicanus-----	15
Schistocerca a. americana--	1
Nymphs-----	12

Grand total

1. Melanoplus differentialis--	27
2. M. mexicanus-----	18
3. M. femur-rubrum-----	13
4. Schistocerca a. americana--	6
5. Orphulella speciosa-----	4
6. 5 other species and nymphs-	32

COLORADO

This is the fifth year in which collections have been made in Colorado. There were 10,135 specimens collected in 9 environments in the cropland on the plains and 8 habitats classified according to elevation above sea level. These elevations are listed as "below 5,000 feet," "5,000 to 7,000 feet," "7,000 to 9,000 feet," "9,000 to 11,000 feet," and "above 11,000 feet." The highest elevations were the summits of Pikes Peak and Mount Evans, with altitudes of over 14,000 feet. Altogether, 73 species were represented in the collections for the entire State.

Several outstanding facts are brought out in the collections for this State. In the first place, it was done systematically and the results show a perfect distribution of species as would be expected according to habitats found in the cropped areas of the plains. As an example, Melanoplus mexicanus was dominant in the small grain, but far more so in the dry-land grain than in the irrigated crop. It was also the most numerous in sorghums and idle land and was about equal with M. bivittatus in beans. Melanoplus femur-rubrum was the dominant species in alfalfa and along field margins, which is to be expected. In the corn: M. differentialis was dominant, with M. bivittatus second and M. femur-rubrum third, the three together forming 94 percent of the population. M. mexicanus was fourth, forming only 2 percent. Between the dry-land and irrigated small grain, neither M. bivittatus, M. differentialis, nor M. femur-rubrum appeared among the first five most important species in the dry land but in the irrigated section, they were second, third, and fifth, respectively. These three species were also the first three most important species in the field margins in the order just named. Other than the dry-land grain and idle land, the crops listed here, including the margins, are largely under irrigation. Therefore, the segregation of the records on the basis of dry land and irrigated land definitely divides the grasshopper infestations into almost a pure M. mexicanus infestation for the former and a mixture of M. bivittatus, M. differentialis, M. femur-rubrum, and M. mexicanus for the latter.

In the classification according to elevation above sea level, it may be noted that no Camnula pellucida occurred below 5,000 feet, and reached its greatest importance on the range land between 7,000 and 9,000 feet, where it was the dominant species. It was also second in numbers in the alfalfa and small grain in this range of altitude and on range land between 9,000 and 11,000 feet. This species did not appear in any numbers at lower altitudes of the plains, woodland, or prairie, except in the more northern latitudes of the northern parts of Michigan, Wisconsin, Minnesota, and North Dakota. It is confined largely to the mountain and low mountain areas of the west.

One of the most enlightening facts is that Melanoplus mexicanus was by far the dominant species collected above 11,000 feet elevation, forming 62 percent of the 531 specimens collected at these altitudes. Some of these collections were made on the summits of Mount Evans and Pikes Peak—above 14,000 feet—and mexicanus was the dominant species.

They may have flown up to these heights. Aeropedellus clavatus Thos. and Melanoplus dodgei Thos. were perhaps the two most important native species of these highest altitudes, although this is not definitely known.

In the Dissosteira longipennis area, this species has decreased sharply in numbers. In the 1939 fall egg survey, only 100 known egg beds, totaling 1,910 acres in area, were located. This involved some 164,000 acres altogether in 6 counties--Adams, Cheyenne, Las Animas, Lincoln, Otero, and Pueblo. In the western slope area there were 4 counties having heavy local infestations in the irrigated sections, with M. bivittatus the dominant species.

COLORADO (1)

Distribution by species of 5,393 specimens collected in various habitats of the cultivated areas of the plains region of Colorado, expressed in percentage of total numbers collected in each habitat

Species	Dry-land grain	Irrigated grain	Alfalfa	Corn	Sorghums	Sugar beets	Beans	Idle land	Field margins	Total specimens	Percentage of grand total
										Number	
Aeoloplus turnbullii Thos.	2.33	--	0.26	--	--	1.61	--	0.95	0.85	39	1.28
Aeoloplus turnbullii bruneri Caud.	7.23	0.94	.43	--	2.21	--	--	2.43	1.59	91	1.30
Aeropedellus clavatus Thos.	--	--	--	--	--	--	--	--	--	--	1.42
Ageneotettix deorum Scudd.	--	1.89	.34	--	--	--	--	.27	1.32	39	2.17
Amphitornus coloradus Thos.	--	--	.17	--	--	--	--	--	.11	4	.44
Arphia p. pseudonietana Thos.	--	--	--	--	--	--	--	--	.11	2	.22
Aulocara elliotti Thos.	.70	2.60	.43	--	--	--	--	.27	.11	23	.77
Boopedon nubilum Say	--	--	--	--	--	--	--	--	--	--	.13
Camula pellucida Scudd.	--	--	--	--	--	--	--	--	--	--	3.77
Chortippus longicornis Latr.	--	--	--	--	--	--	--	--	--	--	.85
Circotettix rabula altior Rehn.	--	--	--	--	--	--	--	--	1.28	24	.04
Circotettix rabula rabula R. & H.	--	--	--	--	--	--	--	--	--	--	.05
Cordillacris cremulata Brun.	--	--	--	--	--	--	--	--	--	--	.03
C. occipitalis cinerea Brun.	--	--	--	--	--	--	--	--	--	--	.04
C. o. occipitalis Thos.	--	--	--	--	--	--	--	--	--	--	.02
Dactyloctenium pictum Thos.	--	--	--	--	--	--	--	--	--	--	.01
Derotmema haydenii Thos.	.47	.23	--	--	--	--	--	--	--	3	.21
Dissosteira carolina L.	.70	1.42	.26	1.01	1.47	--	2.14	.68	--	25	.37
Dissosteira longipennis Thos.	1.86	.47	--	--	--	--	.71	--	.16	14	.32
Drepanopterna femoratum Scudd.	--	--	--	--	--	--	--	--	--	--	.49
Encoptolophus sordidus costalis Scudd.	--	1.42	.09	--	--	--	--	--	.11	9	.82
Hadrotettix trifasciatus Say	.70	.23	--	--	.74	--	--	.95	.05	13	.48
Heliaula rufa Scudd.	--	--	--	--	.74	--	--	.14	--	44	.04
Hesperotettix speciosus Scudd.	--	.23	--	--	--	--	--	--	2.18	44	1.11
Hesperotettix viridis pratensis Scudd.	--	--	--	--	--	--	--	--	.27	5	.06
Hesperotettix viridis Thos.	--	--	--	--	--	--	--	--	.53	10	1.11
Hippiscus rugosus Scudd.	--	--	--	--	--	--	--	--	.11	2	.06
Hypochochloa alba Dodge	--	--	--	--	--	--	--	--	--	--	.05

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Species	Dry-land grain	Irrigated grain	Alfalfa	Corn	Sorghums	Sugar beets	Beans	Idle land	Field margins	Total specimens	Percentage of grand total
<i>Leprus cyaneus</i> Ckll.	---	---	---	---	---	---	---	---	---	Number	0.03
<i>Melanoplus a. angustipennis</i> Dodge	3.26	0.71	1.46	---	---	---	1.43	4.32	2.87	122	2.45
<i>Melanoplus bivittatus</i> Say	.23	8.98	12.05	35.14	13.24	25.61	25.00	3.65	14.88	691	8.04
<i>Melanoplus borealis monticola</i> Scudd.	---	---	---	---	---	---	---	---	---	---	.01
<i>Melanoplus b. bowditchi</i> Scudd.	---	---	---	---	---	---	---	.27	1.49	30	.69
<i>Melanoplus bruneri</i> Scudd.	---	---	---	---	---	---	---	---	---	---	.04
<i>Melanoplus dawsoni</i> Scudd.	---	---	---	---	---	---	---	---	---	---	.34
<i>Melanoplus differentialis</i> Thos.	1.40	6.86	11.62	47.64	18.38	35.48	11.43	4.05	12.07	675	7.48
<i>Melanoplus dodgei</i> Thos.	---	---	---	---	---	---	---	---	---	---	.20
<i>Melanoplus fasciatus</i> Walk.	---	---	---	---	---	---	---	---	---	---	.02
<i>Melanoplus femur-rubrum</i> Deg.	---	6.38	30.20	11.49	5.88	21.51	12.86	.95	28.81	1027	12.53
<i>Melanoplus flavidus</i> Scudd.	.47	1.18	.34	---	.74	---	---	3.24	.37	43	.80
<i>Melanoplus foedus fluvialis</i> Brun.	---	---	---	---	---	---	---	---	---	---	.01
<i>Melanoplus foedus foedus</i> Scudd.	5.83	6.62	2.24	.34	.74	---	12.14	17.16	3.35	288	4.03
<i>Melanoplus gladstoni</i> Scudd.	1.17	---	.09	---	---	---	---	.27	.05	9	.34
<i>Melanoplus infantilis</i> Scudd.	.23	---	---	---	---	---	---	---	---	1	.87
<i>Melanoplus keeleri luridus</i> Dodge	---	---	---	---	---	---	---	---	.27	5	.13
<i>Melanoplus lakinius</i> Scudd.	.93	5.67	3.27	.34	3.68	---	6.43	2.30	1.54	127	2.09
<i>Melanoplus mexicanus</i> Sauss.	62.94	43.26	27.37	2.36	38.23	15.05	25.71	37.16	11.70	1389	26.30
<i>Melanoplus occidentalis</i> Thos.	---	---	.09	---	---	---	---	.41	---	4	.67
<i>Melanoplus packardii</i> Scudd.	6.99	6.38	2.66	1.01	7.35	.53	1.43	10.00	1.70	210	4.00
<i>Melanoplus regalis</i> Dodge	---	---	---	---	---	---	---	---	---	---	.02
<i>Mermiria maculipennis macclungi</i> Rehn	---	1.65	---	---	---	---	---	.13	2.13	48	1.07
<i>Mestobregma plattei plattei</i> Thos.	---	---	---	---	.73	---	---	---	---	4	.11
<i>Metator pardalinus</i> Sauss.	---	---	---	---	---	---	---	---	.16	2	.09
<i>Opeia obscura</i> Thos.	---	---	---	---	---	---	---	---	.11	2	.36
<i>Orphulella pelidna</i> Burm.	---	---	---	---	---	---	---	---	.11	---	.85
<i>Orphulella speciosa</i> Scudd.	---	---	---	---	---	---	---	---	---	---	.10
<i>Pardalophora haldemani</i> Scudd.	---	---	---	---	---	---	---	---	---	---	.01
<i>Paropomalo wyomingensis</i> Thos.	---	---	---	---	---	---	---	---	---	6	.10
<i>Phibostroma quadrimaculatum</i> Thos.	---	---	---	---	---	---	---	---	.32	---	.27
<i>Phoetaliotes nebrascensis</i> Thos.	---	---	---	---	---	---	---	---	.21	4	.60

COLORADO (1)--Continued

Species	Dry- land grain	Irrig- ated grain	Al- falfa	Corn	Sor- ghums	Sugar beets	Beans	Idle land	Field margin	Total speci- mens	Percent age of grand total
Schistocerca lineata Scudd.	--	--	--	0.68	--	--	--	0.27	2.71	55	0.59
Spharagemon collar Scudd.	1.39	2.84	0.86	--	--	--	0.71	6.49	1.17	99	1.34
Spharagemon equale Say	.93	--	.09	--	--	--	--	.13	.05	7	.17
Spharagemon humile morse	--	--	--	--	--	--	--	--	--	--	.07
Trachyrhachis kiowa Kiowa Thos.	--	--	--	--	--	--	--	--	--	--	.51
Trimerotropis campestris McNeill	--	--	--	--	--	--	--	--	--	--	.14
Trimerotropis cincta Thos.	--	--	--	--	--	--	--	--	--	--	.04
Trimerotropis laticincta Sauss.	--	--	.09	--	1.47	--	--	1.22	--	12	.18
Trimerotropis pallidipennis Burm.	--	--	--	--	--	--	--	--	--	--	.01
Trimerotropis p. salina McN.	--	--	--	--	--	--	--	--	--	--	.07
Trimerotropis suffusus Scudd.	--	--	--	--	--	--	--	.68	--	5	.05
Tropidolophus formosus Say	--	--	--	--	--	--	--	--	--	1	.01
Xanthippus corallipes Hald.	--	--	.09	--	--	--	--	1.62	5.10	178	4.28
Nymphs	.23	--	5.50	--	3.68	--	--	--	--	2	.10
Undetermined	--	--	--	--	.73	--	--	--	.05	--	--
Total specimens per environment	429	423	1,162	296	136	186	140	740	1,881	5,393	--

Distribution by species of 4,742 specimens collected at various elevations (in feet) in Colorado,
expressed in percentage of total number collected in each habitat

Species	River- bottom plains	Range below 5,000	Range, 5,000- 7,000	Crop, 5,000- 7,000	Crop, 7,000- 9,000	Range, 7,000- 9,000	Range, 9,000- 11,000	Range above 11,000	Total speci- mens
									Number
Aeoloplus turnbullii Thos.	3.91	1.74	0.36	10.09	--	--	--	--	91
Aeoloplus turnbullii bruneri Caud.	1.82	3.48	--	--	--	--	--	--	41
Aeropedellus clavatus Thos.	--	.17	--	--	--	0.12	6.56	24.29	144
Ageneotettix deorum Scudd.	1.04	5.05	16.42	.61	--	.37	--	--	181
Amphitornus coloradus Thos.	1.04	1.39	1.34	--	--	.50	3.03	--	41
Arphia p. pseudonietana Thos.	.43	--	.86	--	0.30	.87	--	--	20
Aulocara elliotti Thos.	.43	3.31	2.31	.92	--	.87	--	.38	55
Boopedon nubilum Say	.26	--	1.22	--	--	--	--	--	13
Camula pellucida Scudd.	--	--	.24	--	20.00	36.49	10.10	--	382
Chortippus longicornis Latr.	.52	--	--	--	.30	5.98	3.53	--	62
Circotettix rabula altior Rehn	--	--	--	--	--	--	.50	.56	4
Circotettix rabula rabula R. & H.	--	--	--	--	--	.50	.50	--	5
Cerdillacris crenulata Brun.	--	.52	--	--	--	--	--	--	3
C. occipitalis cinerea Brun.	--	--	--	--	--	.50	--	--	4
C. occipitalis occipitalis Thos.	--	--	--	.61	--	--	--	--	2
Dactyloptum pictum Thos.	--	--	.12	--	--	--	--	--	1
Derotmema haydenii Thos.	.26	1.57	.12	.30	.30	.50	--	--	19
Dissosteira carolina h.	.09	.17	.12	.92	1.19	.37	--	--	13
Dissosteira longipennis Thos.	.09	3.13	--	--	--	--	--	--	19
Drepanopterna femoratum Scudd.	.09	3.31	3.65	--	--	--	--	--	50
Encoptolophus sordidus costalis Scudd	4.95	.87	1.09	.92	--	--	--	--	74
Hadrotettix trifasciatus Say	--	2.96	.97	3.36	--	--	--	--	36
Heliaula rufa Scudd.	--	--	.49	--	--	--	--	--	4
Hesperotettix speciosus Scudd.	5.90	--	.12	--	--	--	--	--	69
Hesperotettix viridis Thos.	.09	2.96	7.78	.30	--	.25	9.09	--	103
Hesperotettix viridis pratensis	--	--	.12	--	--	--	--	--	1
Hippiscus rugosus Scudd.	.26	.17	--	--	--	--	--	--	4
Hypochlora alba Dodge	--	.17	.24	--	--	.25	--	--	5
Leprus cyaneus Ckll.	--	.17	--	--	--	--	--	.38	3
Melanoplus a. angustipennis	2.43	2.09	1.22	10.70	.30	3.24	7.07	--	126
Melanoplus bivittatus	3.21	.52	.85	4.59	8.95	3.24	3.03	--	124

COLORADO (2)--Continued

Distribution by species of 4,742 specimens collected at various elevations in Colorado, expressed in percentage of total number collected in each habitat

Species	River- bottom plains	Range below 5,000	Range, 5,000 7,000	Crop, 5,000 7,000	Crop, 7,000 9,000	Range, 7,000 9,000	Range, 9,000 11,000	Range above 11,000	Total speci- mens
Schistocerca lineata Scudd.	0.26	0.35	--	--	--	--	--	--	5
Spharagemon collara Scudd.	.87	1.92	--	3.36	0.30	--	1.51	0.19	37
Spharagemon equale Say	--	.87	0.36	.30	.30	--	--	--	10
Spharagemon humile Morse	--	--	--	--	--	0.87	--	--	7
Trachyrhachis kiowa kiowa Thos.	.87	5.40	1.70	.30	--	.12	--	--	52
Trimerotropis campestris McN.	--	--	--	--	2.09	.87	--	--	14
Trimerotropis cincta Thos.	--	--	--	--	--	.50	--	--	4
Trimerotropis laticincta Sauss.	.26	.52	--	--	--	--	--	--	6
Trimerotropis pallidipennis Burm.	--	--	.12	--	--	--	--	--	1
Trimerotropis p. salina McNeill	.61	--	--	--	--	--	--	--	7
Trimerotropis suffusus Scudd.	--	--	--	--	--	.62	--	--	5
Nymphs	5.03	.52	3.16	2.45	11.64	10.46	14.65	1.69	256
Undetermined	.17	.52	--	--	--	.25	--	.19	8
Total specimens per environment	1,152	574	822	327	335	803	198	531	4,742

Distribution by species of 4,742 specimens collected at various elevations in Colorado,
expressed in percentage of total number collected in each habitat

Species	River- bottom plains	Range below 5,000	Range 5,000 7,000	Crop 5,000 7,000	Crop 7,000 9,000	Range 7,000 9,000	Range 9,000 11,000	Range above 11,000	Total speci- mens
Melanoplus borealis monticola	--	--	--	--	--	0.12	--	--	1
Melanoplus b. bowditchi Scudd.	--	6.97	--	--	--	--	--	--	40
Melanoplus bruneri Scudd.	--	--	--	--	--	.50	--	--	4
Melanoplus dawsoni Scudd.	--	--	--	--	--	2.74	6.06	--	34
Melanoplus differentialis Thos.	6.60	.87	--	0.92	--	--	--	--	84
Melanoplus dodgei	--	--	--	--	--	--	1.01	3.39	20
Melanoplus fasciatus Walk.	--	--	--	--	--	--	1.01	--	2
Melanoplus femur-rubrum Deg.	--	--	0.97	1.53	7.46	2.74	1.01	--	244
Melanoplus flavidus Scudd.	15.71	--	--	2.14	--	.12	--	.19	38
M. foedus foedus Scudd.	2.60	--	--	5.81	.60	--	--	.56	121
Melanoplus foedus fluvialis Brun.	5.03	6.79	--	--	--	--	--	--	1
Melanoplus gladstoni Scudd.	.09	--	--	--	--	--	--	--	323
Melanoplus infantilis Scudd.	.09	1.22	1.09	--	1.79	.37	--	--	26
Melanoplus keeleri luridus Dodge	--	1.92	.36	--	7.46	5.85	1.01	--	87
Melanoplus lakinus Scudd.	--	.35	.36	--	--	.37	--	--	8
Melanoplus mexicanus Sauss.	6.60	.17	--	2.45	--	--	--	--	85
Melanoplus occidentalis Thos.	10.76	25.26	33.09	36.39	34.63	16.44	21.72	61.77	1279
Melanoplus packardii Scudd.	.09	1.57	.73	.30	1.19	.75	4.55	5.27	64
Melanoplus regalis Dodge	2.60	3.83	9.73	10.70	1.19	1.24	4.55	1.13	196
Mermiria maculipes	--	.35	--	--	--	--	--	--	2
Mestobregma plattei plattei Thos.	4.60	.52	.49	--	--	.12	--	--	61
Metator pardalinus Sauss.	--	.52	.24	--	--	.75	--	--	11
Opeia obscura Thos.	--	.70	.12	--	--	--	--	--	5
Orphulella p. pelidna Burm.	1.04	1.92	1.46	--	--	--	--	--	35
Orphulella speciosa Scudd.	4.69	--	3.65	--	--	--	--	--	84
Pardalophora haldemani Scudd.	.61	--	.36	--	--	--	--	--	10
Paropomalo wyomingensis Thos.	.09	--	--	--	--	--	--	--	1
Phlibostroma quadrimaculatum Thos.	--	.70	--	--	--	--	--	--	4
Phoetaliotes nebrascensis Thos.	4.34	2.26	1.58	--	--	.12	--	--	27
		.17	.73	--	--	--	--	--	57

COLORADO

The percentages of individuals of the various species present in Colorado arranged according to the common habitats, are summarized as follows:

<u>River bottom plains</u>	<u>Percent</u>	<u>Rangeland, below 5,000 feet</u>	<u>Percent</u>
1. <i>Melanoplus femur-rubrum</i> -----	16	1. <i>Melanoplus mexicanus</i> -----	2
2. <i>Melanoplus mexicanus</i> -----	11	2. <i>Melanoplus b. bowditchi</i> -----	
3. <i>Melanoplus differentialis</i> -----	7	3. <i>Melanoplus f. foedus</i> -----	
4. <i>Melanoplus lakinus</i> -----	7	4. <i>Trachyrhynchus kiowa</i> -----	
5. <i>Hesperotettix speciosus</i> -----	6	5. <i>Ageneotettix deorum</i> -----	
6. 34 other spp. and undet.-----	48	6. 37 other spp. and undet.-----	5
7. Nymphs-----	5	7. Nymphs-----	

<u>Range, 5,000 to 7,000 feet</u>		<u>Crop, 5,000 to 7,000 feet</u>	
1. <i>Melanoplus mexicanus</i> -----	33	1. <i>Melanoplus mexicanus</i> -----	3
2. <i>Ageneotettix deorum</i> -----	16	2. <i>Melanoplus packardii</i> -----	1
3. <i>Melanoplus packardii</i> -----	10	3. <i>Melanoplus a. angustipennis</i> -----	1
4. <i>Hesperotettix viridis</i> -----	8	4. <i>Aeoloplus turnbullii</i> -----	1
5. <i>Drepanopterna femoratum</i> -----	4	5. <i>Melanoplus foedus foedus</i> -----	
6. <i>Orphulella p. pelidna</i> -----	4	6. 17 other species-----	2
7. 32 other species-----	22	7. Nymphs-----	
8. Nymphs-----	3		

<u>Crop, 7,000 to 9,000 feet</u>		<u>Range, 7,000 to 9,000 feet</u>	
1. <i>Melanoplus mexicanus</i> -----	35	1. <i>Camnula pellucida</i> -----	30
2. <i>Camnula pellucida</i> -----	20	2. <i>Melanoplus mexicanus</i> -----	10
3. <i>Melanoplus femur-rubrum</i> -----	7	3. <i>Chortippus longicornis</i> -----	
4. <i>Melanoplus infantilis</i> -----	7	4. <i>Melanoplus infantilis</i> -----	
5. <i>Trimerotropis campestris</i> -----	2	5. <i>Melanoplus dawsoni</i> -----	
6. 10 other species-----	17	6. <i>Melanoplus femur-rubrum</i> -----	
7. Nymphs-----	12	7. 25 other species and undet.-----	20
		8. Nymphs-----	10

<u>Range, 9,000 to 11,000 feet</u>		<u>Range, 11,000 to 14,000 feet</u>	
1. <i>Melanoplus mexicanus</i> -----	22	1. <i>Melanoplus mexicanus</i> -----	62
2. <i>Camnula pellucida</i> -----	10	2. <i>Aeropedellus clavatus</i> -----	24
3. <i>Hesperotettix viridis</i> -----	9	3. <i>Melanoplus occidentalis</i> -----	5
4. <i>Melanoplus angustipennis</i> -----	7	4. <i>Melanoplus dodgei</i> -----	2
5. <i>Aeropedellus clavatus</i> -----	7	5. <i>Melanoplus packardii</i> -----	1
6. 13 other species-----	30	6. 6 other species-----	2
7. Nymphs-----	15	7. Nymphs-----	2

<u>Dry-land grain</u>		<u>Irrigated grain</u>	
1. <i>Melanoplus mexicanus</i> -----	63	1. <i>Melanoplus mexicanus</i> -----	43
2. <i>Aeoloplus turnbullii bruneri</i> -----	7	2. <i>Melanoplus bivittatus</i> -----	9
3. <i>Melanoplus packardii</i> -----	7	3. <i>Melanoplus differentialis</i> -----	7
4. <i>Melanoplus f. foedus</i> -----	6	4. <i>Melanoplus f. foedus</i> -----	7
5. <i>Melanoplus a. angustipennis</i> -----	3	5. <i>Melanoplus femur-rubrum</i> -----	6
6. 14 other species-----	14	6. <i>Melanoplus packardii</i> -----	6
		7. 14 other species-----	22

COLORADO (Continued)

<u>Alfalfa</u>	<u>Percent</u>	<u>Corn</u>	<u>Percent</u>
Melanoplus femur-rubrum-----	30	1. Melanoplus differentialis-----	48
Melanoplus mexicanus-----	27	2. Melanoplus bivittatus-----	35
Melanoplus bivittatus-----	12	3. Melanoplus femur-rubrum-----	11
Melanoplus differentialis-----	12	4. Melanoplus mexicanus-----	2
Melanoplus lakinus-----	3	5. Dissosteira carolina-----	1
17 other species-----	11	6. Melanoplus packardii-----	1
Nymphs-----	5	7. 3 other species-----	2
<u>Sorghums</u>		<u>Sugar beets</u>	
Melanoplus mexicanus-----	38	1. Melanoplus differentialis-----	35
Melanoplus differentialis-----	18	2. Melanoplus bivittatus-----	26
Melanoplus bivittatus-----	13	3. Melanoplus femur-rubrum-----	21
Melanoplus packardii-----	7	4. Melanoplus mexicanus-----	15
Melanoplus femur-rubrum-----	6	5. Aeoloplus turnbullii-----	2
9 other species-----	14	6. Melanoplus packardii-----	1
Nymphs-----	4		
<u>Beans</u>		<u>Idle land</u>	
Melanoplus mexicanus-----	26	1. Melanoplus mexicanus-----	37
Melanoplus bivittatus-----	25	2. Melanoplus foedus foedus-----	17
Melanoplus femur-rubrum-----	13	3. Melanoplus packardii-----	10
Melanoplus foedus foedus-----	12	4. Spharagemon collare-----	6
Melanoplus differentialis-----	11	5. Melanoplus a. angustipennis---	4
6 other species-----	11	6. 20 other species-----	24
Nymphs-----	2	7. Nymphs-----	2
<u>Field margins</u>		<u>Grand total</u>	
Melanoplus femur-rubrum-----	29	1. Melanoplus mexicanus-----	26
Melanoplus bivittatus-----	15	2. Melanoplus femur-rubrum-----	12
Melanoplus differentialis-----	12	3. Melanoplus bivittatus-----	8
Melanoplus mexicanus-----	12	4. Melanoplus differentialis-----	7
Melanoplus foedus foedus-----	3	5. Melanoplus foedus foedus-----	4
30 other species-----	24	6. 68 other species-----	39
Nymphs-----	5	7. Nymphs-----	4

IDAHO

This was the second year in which collections have been made in typical environments in Idaho during the adult survey. A total of 2,911 specimens were collected in 4 different habitats and 20 species were represented in the collections.

Melanoplus mexicanus was the dominant species in 3 out of 4 of the habitats, but M. femur-rubrum was the most numerous in alfalfa and in the total number collected. Alfalfa is the most favorable place for grasshoppers and this is the reason that M. femur-rubrum was dominant for collections in the State as a whole. Infestations for the State as a whole were light and scattered. Only two counties which are likely to need as much as 25 and 30 tons of bait for control.

Distribution by species of 2,911 specimens collected in Idaho, expressed in percentage of total number collected in each habitat

Species	Small grain	Alfalfa	Field margin	Idle land	Total specimens	Percentage of grand total
Ageneotettix deorum Scudd.---	---	---	0.23	---	2	0.07
Amphitornus coloradus Thos.---	0.38	---	---	---	1	.03
Arphia pseudonietana Thos.---	.38	0.07	.23	0.24	5	.17
Aulocara elliotti Thos.---	1.89	.07	.35	---	9	.31
Camula pellucida Scudd.---	.76	---	.46	---	6	.30
Chortippus longicornis Latr.--	---	---	.46	.24	5	.17
Conozoa wallula Scudd.---	---	.14	.23	---	4	.14
Dissosteira carolina L.---	1.51	.22	1.28	1.20	23	.79
Drepanopterna femoratum Scudd.	---	---	.23	---	2	.07
Hesperotettix viridis Thos.---	.38	---	.35	---	4	.14
Melanoplus bivittatus Say---	.76	---	6.39	---	100	3.43
M. dawsoni Scudd.---	---	2.92	---	.72	8	.27
M. femur-rubrum Deg.---	20.07	.51	---	.24	1,256	43.15
M. foedus foedus Scudd.---	7.20	56.02	30.43	41.69	133	4.57
M. infantilis Scudd.---	.76	2.19	9.06	1.44	3	.10
M. keeleri luridus (Dodge)---	---	.07	---	---	4	.14
M. mexicanus Sauss.---	57.20	---	.46	---	1,145	39.33
Oedaleonotus enigma Scudd.---	---	30.85	44.60	45.06	2	.07
Phoetaliotes nebrascensis Thos.	7.20	---	.23	---	95	3.26
Spharagenon equale Say---	---	.87	3.14	8.91	1	.03
Trimerotropis p. pallidipennis	.38	.07	---	---	1	.03
Nymphs-----	1.14	5.98	1.86	.24	102	3.50
Total specimens per environment-----	264	1,371	861	415	2,911	---

IDAHO

The percentages of individuals of the various species present in Idaho, arranged according to crops infested, are summarized as follows:

<u>Small grain</u>	<u>Percent</u>	<u>Alfalfa</u>	<u>Percent</u>
1. Melanoplus mexicanus-----	57	1. Melanoplus femur-rubrum-----	56
2. M. femur-rubrum-----	20	2. M. mexicanus-----	31
3. M. foedus foedus-----	7	3. M. bivittatus-----	2
4. Phoetaliotes nebrascensis--	7	4. M. foedus foedus-----	2
5. Aulocara elliotti-----	2	5. Phoetaliotes nebrascensis----	1
6. 8 other species and nymphs-	7	6. 7 other species and nymphs----	7

<u>Field margin</u>		<u>Idle land</u>	
1. Melanoplus mexicanus-----	45	1. Melanoplus mexicanus-----	45
2. M. femur-rubrum-----	30	2. M. femur-rubrum-----	42
3. M. foedus foedus-----	9	3. Phoetaliotes nebrascensis----	9
4. M. bivittatus-----	6	4. Dissosteira carolina-----	1
5. Phoetaliotes nebrascensis--	3	5. M. foedus foedus-----	1
6. 11 other species and nymphs	7	6. 4 other species and nymphs----	2

<u>Grand total</u>	<u>Percent</u>
1. Melanoplus femur-rubrum-----	43
2. M. mexicanus-----	39
3. M. bivittatus-----	3
4. M. foedus foedus-----	5
5. Phoetaliotes nebrascensis----	3
6. 16 other species and nymphs----	7

ILLINOIS

This is the second year in which collections have been made in this State during the adult survey. A total of 6,065 specimens were collected in 6 habitats, and 28 species of Acrididae were included in the collections. Melanoplus femur-rubrum was the dominant species; M. mexicanus was second; M. differentialis was third. The Tettigoniidae or long-horned grasshoppers, were abundant in the collections, and the family as a whole was second in numbers to M. femur-rubrum. There was little change in the relative abundance of the different species from 1938 to 1939. Infestations in the State are low.

ILLINOIS

Distribution by species of 6,065 specimens collected in Illinois, expressed in percentage of total number collected in each habitat

Species	Small grain	Roadside	Pasture	Legumes	Idle land	Tame hay	Total specimens	Percentage of grand total
<i>Ageneotettix deorum</i>	0.17	0.11	0.24	--	2.26	--	23	0.38
<i>Arphia sulphurea</i> F.	--	.11	--	--	--	--	1	.02
<i>Arphia xanthoptera</i> Burm.	.09	.22	.12	--	1.13	0.17	14	.23
<i>Campylocantha olivacea</i> Scudd.	.43	.22	.06	--	.14	--	9	.14
<i>Chortippus longicornis</i>	.09	--	--	--	--	--	1	.02
<i>Chortophaga viridifasciata</i> (Dug.)	2.08	4.67	1.39	0.19	.99	.51	102	1.68
<i>Dichromorpha viridis</i> Scudd.	.17	.54	.12	--	.14	.17	11	.18
<i>Dissosteira carolina</i>	.09	.98	.06	.10	.56	--	16	.26
<i>Encyrtolophus s. sordidus</i> (Burm.)	.35	.43	.42	.19	.28	.34	21	.35
<i>Hesperotettix viridis pratensis</i>	.09	--	--	--	.14	--	2	.04
<i>Hippiscus rugosus</i>	.09	.76	.79	--	.99	.34	30	.49
<i>Melanoplus angustipennis</i> (Dodge)	.35	1.41	--	.10	3.39	--	42	.69
<i>M. bivittatus</i>	--	--	.06	.10	.28	--	4	.07
<i>M. differentialis</i>	3.81	10.43	.67	13.58	5.93	1.72	345	5.69
<i>M. femur-rubrum</i>	23.03	13.69	20.82	25.43	5.37	51.80	1342	22.13
<i>M. flavidus</i>	--	--	.18	--	.42	--	6	.10
<i>M. keeleri luridus</i>	--	--	.06	.19	--	--	3	.05
<i>M. mexicanus</i>	14.98	6.63	5.08	5.74	5.23	6.86	455	7.50
<i>Mermiria maculipennis macclungi</i>	.09	.11	--	--	--	--	2	.04
<i>Orphulella speciosa</i>	.35	.33	4.78	.67	.85	1.37	107	1.76
<i>Pardalophora phoenicoptera</i> Burm.	--	.11	--	--	--	--	1	.02
<i>Phaenolotus nebrascensis</i>	--	--	--	--	.14	--	1	.02
<i>Psinidia f. fenestralis</i> Serv.	.09	--	--	--	.14	--	2	.03
<i>Schistocerca alutacea</i> Harr.	--	--	.12	.29	1.41	--	15	.25
<i>S. americana americana</i> (Drury)	1.13	1.09	.48	.76	.14	.51	43	.71
<i>Spharagemon collaris</i>	--	.11	--	--	.56	--	5	.08
<i>Syrbula admirabilis</i> Uhl.	--	2.83	2.42	1.05	2.12	1.72	102	1.68
<i>Tettigoniidae</i>	12.81	20.54	13.62	14.72	18.78	13.72	929	15.32
<i>Trachyrhachis kiowa fuscifrons</i> Stal	--	.76	.42	--	.85	.34	22	.36
<i>Trimerotropis citrina</i> Scudd.	--	--	--	--	.71	--	5	.08
<i>Nymphs</i>	39.74	34.02	48.06	36.90	47.03	20.41	2404	39.64
Total specimens per environment	1 155	921	1 652	1 016	708	527	6 065	

ILLINOIS

The percentages of individuals of the various species present in Illinois, arranged according to crops infested, are summarized as follows:

<u>Small grain</u>		<u>Percent</u>		<u>Roadside</u>		<u>Percent</u>	
Melanoplus femur-rubrum-----		23		1. Tettigoniidae-----		21	
Melanoplus mexicanus-----		15		2. Melanoplus femur-rubrum----		14	
Tettigoniidae-----		13		3. Melanoplus mexicanus-----		7	
Melanoplus differentialis-----		4		4. Chortophaga viridifasciata--		5	
Chortophaga viridifasciata-----		2		5. Syrbula admirabilis-----		3	
14 other species-----		3		6. 16 other species-----		16	
Nymphs-----		40		7. Nymphs-----		34	
<u>Pasture</u>				<u>Legumes</u>			
Melanoplus femur-rubrum-----		21		1. Melanoplus femur-rubrum-----		25	
Tettigoniidae-----		14		2. Tettigoniidae-----		15	
Melanoplus mexicanus-----		5		3. Melanoplus differentialis----		14	
Orphulella speciosa-----		5		4. Melanoplus mexicanus-----		6	
Syrbula admirabilis-----		2		5. Syrbula admirabilis-----		1	
15 other species-----		5		6. 13 other species-----		2	
Nymphs-----		48		7. Nymphs-----		37	
<u>Idle land</u>				<u>Tame hay</u>			
Tettigoniidae-----		19		1. Melanoplus femur-rubrum-----		52	
Melanoplus differentialis-----		6		2. Tettigoniidae-----		14	
Melanoplus femur-rubrum-----		5		3. Melanoplus mexicanus-----		7	
Melanoplus mexicanus-----		5		4. Melanoplus differentialis----		2	
Melanoplus angustipennis-----		3		5. Syrbula admirabilis-----		2	
20 other species-----		15		6. 8 other species-----		3	
Nymphs-----		47		7. Nymphs-----		20	
<u>Grand total</u>		<u>Percent</u>					
1. Melanoplus femur-rubrum-----		22					
2. Tettigoniidae-----		15					
3. Melanoplus mexicanus-----		7					
4. Melanoplus differentialis-----		6					
5. Orphulella speciosa-----		2					
6. 25 other species-----		8					
7. Nymphs-----		40					

IOWA

This is the fifth year in which collections have been made in Iowa during the adult grasshopper survey. In this 1939 survey 2,577 specimens were collected in 7 major environments, with 24 species represented in the collections. The dominant species in the collections from 5 out of 7 habitats was Melanoplus femur-rubrum, with M. mexicanus second in numbers. Nymphs, probably M. femur-rubrum, were numerous. M. differentialis was dominant in corn and sorghum; M. mexicanus in red clover. The order of importance based on numbers was the same as in 1938 for the 5 highest ranking species. Collections were made so late in the summer that many M. bivittatus adults were probably missed, as this species finished its life cycle early.

Only 17 counties, in the west-central and north-western parts, out of the 99 counties in the State, may need some control work in 1940. The most severe infestations are along field margins, and considerable damage to crops was noted in the adult survey. The normally heavy rainfall, however, acts as a decided check on the development of infestations in this State and only drought brings on grasshopper trouble.

Distribution by species of 2,577 specimens collected in Iowa, expressed in percentage of total number collected in each habitat

Species	Corn and sorghum	Soybeans	Red clover	Alfalfa and sweet- clover	Small grain	Woody pasture	Field margins	Total specimens	Percentage of grand total
								Number	
Ageneotettix deorum	--	--	--	2.74	4.43	4.39	3.00	77	2.99
Brachystola magna Girard	--	--	--	--	--	.49	.15	3	.12
Chortippus longicornis	--	--	--	--	--	--	.15	1	.04
Chorthopaga viridifasciata (Deg.)	--	--	--	--	--	.49	.15	2	.08
Dissosteira carolina	--	--	--	--	.40	--	--	1	.04
Dichromorpha viridis	--	--	--	--	.40	--	--	1	.04
Encyrtolophus s. sordidus (Eurm.)	--	--	--	.10	.81	.73	.30	8	.31
Hadrotettix trifasciatus	--	--	--	--	--	.24	--	1	.04
Hesperotettix speciosus	--	--	--	--	--	.24	--	1	.04
H. viridis pratensis	--	--	--	--	--	--	.15	1	.04
Hippiscus rugosus	--	--	0.82	--	--	.24	--	2	.08
Melanoplus bivittatus	18.03	--	--	7.44	4.03	4.15	9.59	178	6.91
M. differentialis	22.95	--	--	3.13	9.27	7.07	15.74	203	7.88
M. femur-rubrum	18.03	72.92	39.34	26.74	32.66	39.51	36.73	855	33.18
M. keeleri luridus	--	--	--	--	--	.24	--	1	.04
M. mexicanus	21.31	14.58	54.92	20.76	16.53	23.66	10.49	507	19.67
M. packardii	1.64	--	--	.29	--	.97	--	8	.31
Mermiria maculipennis macclungi	--	--	--	--	--	.24	--	1	.04
Orphulella speciosa	--	--	--	.10	--	.49	--	3	.12
Phaetaliotes nebrascensis	--	--	--	--	--	.24	--	1	.04
Schistocerca a. americana	--	--	1.64	--	--	.49	.60	8	.31
Schistocerca speciosa	--	--	--	--	--	.97	.30	6	.23
Syrbula admirabilis Uhler	--	--	--	.10	--	.24	.15	3	.12
Tettigoniidae sp.	--	--	--	2.06	--	--	4.80	53	2.06
Nymphs	18.03	12.50	3.28	36.53	31.45	14.88	17.84	652	25.30
Total specimens per environment	61	48	122	1,021	248	410	667	2,577	--

IOWA

The percentages of individuals of the various species present in Iowa, arranged according to crops infested, are summarized as follows:

<u>Corn and sorghum</u>		<u>Percent</u>	<u>Soybeans</u>		<u>Percent</u>
1.	Melanoplus differentialis-----	23	1.	Melanoplus femur-rubrum---	78
2.	M. mexicanus-----	21	2.	M. mexicanus-----	18
3.	M. bivittatus-----	18	3.	Nymphs-----	12
4.	M. femur-rubrum-----	18			
5.	M. packardii-----	2			
6.	Nymphs-----	18			
<u>Red clover</u>			<u>Alfalfa and sweetclover</u>		
1.	Melanoplus mexicanus-----	55	1.	Melanoplus femur-rubrum---	27
2.	M. femur-rubrum-----	39	2.	M. mexicanus-----	21
3.	Schistocerca a. americana-----	2	3.	M. bivittatus-----	7
4.	Hippiscus rugosus-----	1	4.	M. differentialis-----	3
5.	Nymphs-----	3	5.	Ageneotettix deorum-----	3
			6.	5 other species and nymphs	39
<u>Small grain</u>			<u>Weedy pasture</u>		
1.	Melanoplus femur-rubrum-----	33	1.	Melanoplus femur-rubrum---	39
2.	M. mexicanus-----	16	2.	M. mexicanus-----	24
3.	M. differentialis-----	9	3.	M. differentialis-----	7
4.	Ageneotettix deorum-----	4	4.	Ageneotettix deorum-----	4
5.	M. bivittatus-----	4	5.	M. bivittatus-----	4
6.	3 other species and nymphs----	34	6.	14 other species and nymphs	22
<u>Field margins</u>			<u>Grand total</u>		
1.	Melanoplus femur-rubrum-----	37	1.	Melanoplus femur-rubrum---	33
2.	M. differentialis-----	16	2.	M. mexicanus-----	20
3.	M. mexicanus-----	10	3.	M. differentialis-----	8
4.	M. bivittatus-----	10	4.	M. bivittatus-----	7
5.	Tettigoniidae sp.-----	5	5.	Ageneotettix deorum-----	3
6.	9 other species and nymphs----	22	6.	19 other species and nymphs	29

KANSAS

This is the third year in which collections have been made in Kansas during the adult survey. In 6 different environments 3,196 specimens were collected, 29 species being represented. Melanoplus mexicanus was the dominant species in 3 of the 6 environments and was first in numbers in the collection for the State as a whole. Aeoloplus turnbullii bruneri was the second in numbers for the State, being dominant in pastures and margins. M. differentialis was the third in numbers, being the dominant species in corn and sorghums. The main difference between the 1938 and 1939 collections has been the increase in relative abundance of Aeoloplus turnbullii bruneri.

The State is roughly divided into three areas east and west, according to grasshopper conditions. There are no infestations in the eastern third of the State. In the middle third, they are light and spotted. The western third is the area of threatening to severe infestations, where control campaigns are most likely to be necessary.

KANSAS

Distribution by species of 3,196 specimens collected in Kansas, expressed in percentage of total number collected in each habitat

Species	Alfalfa	Pasture	Small grain	Roadside and margin	Sorghum and corn	Idle land	Total specimens	Percentage of grand total
Acrolophus hirtipes Say	--	--	--	0.40	--	--	3	0.09
Aeoloplus turnbullii bruneri	8.67	30.60	31.64	19.17	0.27	13.91	661	20.68
Ageneotettix deorum	--	.73	--	--	.27	--	5	.16
Aulocara elliotti	--	.18	.37	.13	--	--	5	.16
Boopedon nubilum	--	2.00	--	--	--	--	11	.34
Brachystola magna	--	1.82	.12	.27	--	--	13	.41
Derotyma haydenii	--	.18	--	--	--	--	1	.03
Disosteira longipennis	--	2.00	4.59	.66	4.93	--	71	2.22
Hadrotettix trifasciatus	--	.91	--	.13	.27	--	7	.22
Hesperotettix speciosus	--	7.10	.12	8.79	--	1.91	117	3.66
Melanoplus angustipennis Dodge	--	--	.12	--	--	--	1	.03
M. bivittatus	2.00	8.20	3.72	5.06	17.80	2.78	197	6.16
M. bowditchi bowditchi	--	--	.12	--	.27	--	2	.06
M. differentialis	12.67	6.37	4.22	13.58	54.25	4.52	414	12.95
M. discolor Scudd.	--	--	.12	--	--	--	1	.03
M. femur-rubrum	.67	--	.12	.53	--	--	6	.19
M. foedus foedus	2.00	1.09	.87	.80	1.37	4.35	52	1.63
M. lakinus	--	2.91	2.48	5.99	3.29	5.39	124	3.88
M. mexicanus	34.67	16.03	36.72	18.51	10.96	36.00	822	25.72
M. packardii	8.00	10.38	8.06	7.06	3.29	7.83	244	7.63
Mermiria maculipennis Rehn	--	2.18	.12	--	--	--	13	.41
Mermiria neomexicana Thos.	--	.18	--	--	--	--	1	.03
Opeia obscura	--	.18	--	--	--	--	1	.03
Pardalophora haldemani Scudd.	--	2.73	--	--	--	--	15	.47
Phoetaliotes nebrascensis	--	2.18	--	--	--	--	14	.44
Schistocerca lineata	1.33	--	--	--	--	.17	1	.03
Spharagemon collare	--	--	--	--	.27	--	1	.03
Spharagemon equale	--	.36	--	--	--	--	2	.06
Trimerotropis laticincta	--	.18	.12	--	.27	.17	4	.12
Undetermined	--	--	.12	.27	--	--	3	.09
Nymphs	30.00	1.46	6.20	18.64	2.46	22.96	384	12.01
Total specimens per environment	150	150	150	150	150	150	150	150

KANSAS

The percentages of individuals of the various species present in Kansas, arranged according to crops infested, are summarized as follows:

<u>Alfalfa</u>	<u>Percent</u>	<u>Pasture</u>	<u>Percent</u>
Melanoplus mexicanus-----	35	1. Aeoloplus turnbullii bruneri-	31
M. differentialis-----	13	2. Melanoplus mexicanus-----	16
Aeoloplus turn. bruneri----	9	3. M. packardii-----	10
M. packardii-----	8	4. M. bivittatus-----	8
M. bivittatus-----	2	5. Hesperotettix speciosus-----	7
M. foedus foedus-----	2	6. 17 other species and nymphs--	28
2 other species and nymphs--	31		

<u>Small grain</u>		<u>Roadside and margin</u>	
Melanoplus mexicanus-----	37	1. Aeoloplus turn. bruneri-----	19
Aeoloplus turn. bruneri-----	32	2. M. mexicanus-----	18
M. packardii-----	8	3. M. differentialis-----	14
Dissosteira longipennis-----	5	4. Hesperotettix speciosus-----	9
M. differentialis-----	4	5. M. packardii-----	7
12 other species, undeter. and nymphs-----	14	6. 9 other species, undeter- mined, and nymphs-----	33

<u>Sorghum and corn</u>		<u>Idle land</u>	
Melanoplus differentialis---	54	1. Melanoplus mexicanus-----	36
M. bivittatus-----	18	2. Aeoloplus turn. bruneri-----	14
M. mexicanus-----	11	3. M. packardii-----	8
Dissosteira longipennis-----	5	4. M. lakinus-----	5
M. lakinus-----	3	5. M. differentialis-----	4
M. packardii-----	3	6. M. foedus foedus-----	4
7 other species and nymphs--	6	7. 4 other species and nymphs--	29

<u>Grand total</u>	<u>Percent</u>
1. Melanoplus mexicanus-----	26
2. Aeoloplus turnbullii bruneri	21
3. M. differentialis-----	13
4. M. packardii-----	8
5. M. bivittatus-----	6
6. 24 other species, undeter- mined, and nymphs-----	26

MICHIGAN

This is the fifth year that collections have been made in typical environments in Michigan during the adult survey. There were 17,876 specimens collected in 10 habitats and 19 species of Acrididae were included in the collections. The family Tettigoniidae is grouped as a whole. Melanoplus mexicanus was by far the dominant species in all the environments. M. femur-rubrum was second in numbers and Ageneotettix deorum third. Camnula pellucida, once an important species, was fourth in abundance. There was some change in the relative abundance of the species from 1938 to 1939. M. femur-rubrum increased in relative abundance and C. pellucida greatly decreased. M. mexicanus was not as dominant in 1939 as in 1938.

The worst infestations are to be found in the northern half of the Southern Peninsula, where light to severe infestations occur. In the Upper Peninsula, threatening to severe infestations are few and widely scattered.

Distribution by species of 17,876 specimens collected in Michigan, expressed in percentage of total number collected in each habitat

Species	Pas- ture	De- pleted pasture	Road- side	Leg- umes	Small grain	Idle land	Native hay	Tame hay	Woods and stream	Misc. row crops	Total speci- mens	Percentage of grand total
											Number	
Ageneotettix deorum	8.54	19.11	11.74	4.65	2.43	5.49	3.49	1.82	7.98	4.04	1418	7.93
Arphia pseudonietana Thos.	1.79	1.28	1.81	.49	.44	4.10	1.30	.61	2.42	--	284	1.59
Camula pellucida	4.52	.83	2.18	2.22	1.55	3.74	3.58	3.18	1.93	6.06	544	3.04
Chortippus longicornis	.43	--	1.35	1.25	.77	.07	1.70	1.51	1.33	--	156	.87
Circotettix verruculatus Kby.	.02	--	--	--	--	--	--	--	--	--	1	.01
Dissosteira carolina	--	--	.71	.16	--	.15	.04	--	--	--	26	.15
Encyrtolophus s. sordidus (Burm.)	1.14	.83	.87	.73	--	.22	.09	.76	.24	--	124	.69
Hesperotettix viridis pratensis	--	--	.04	--	--	--	--	--	--	--	1	.01
Melanoplus angustipennis (Dodge)	.18	1.09	.19	.20	1.88	--	.04	--	--	1.01	55	.31
M. bivittatus	.16	.26	.19	.28	.22	.29	.18	.30	.36	--	39	.22
M. dawsoni	.16	--	.08	.08	--	.07	.36	.15	.24	--	24	.13
M. femur-rubrum	11.74	2.11	12.64	24.25	34.73	9.60	18.17	30.71	35.43	1.01	2915	16.29
M. flavidus	.08	.06	--	--	.22	.29	.04	--	--	2.02	14	.08
M. keeleri luridus	.02	.06	.04	--	--	--	--	--	--	--	3	.02
M. mexicanus	63.70	68.92	61.37	54.93	49.11	69.08	63.78	45.69	33.37	74.75	10775	60.23
Orphulella speciosa	.90	.26	.87	.57	--	.66	.13	.30	1.09	--	110	.61
Pseudopomala brachyptera Scudd.	--	--	.11	.24	.11	--	--	.60	--	--	14	.08
Schistocerca alutacea	.08	.51	.08	--	--	--	--	--	--	--	14	.08
Spharagemon bolli Scudd.	--	--	--	--	--	--	--	--	.24	--	2	.01
Spharagemon collare	1.37	2.69	.49	.81	.44	1.54	.76	.30	.36	6.06	198	1.11
Nymphs	3.79	1.98	3.42	7.28	5.31	3.59	4.52	6.05	7.01	2.02	793	4.43
Tettigoniidae	1.34	.06	1.77	1.82	2.77	1.10	1.79	8.02	7.86	2.02	361	2.01
Undetermined	.02	--	.04	.04	--	--	--	--	.12	1.01	5	.03
Total specimens per environment	5,090	1,565	2,657	2,474	904	1,365	2,234	661	827	99	17,876	--

MICHIGAN

The percentages of individuals of the various species present in Michigan arranged according to habitats, are summarized as follows:

<u>Pasture</u>		<u>Percent</u>	<u>Depleted pasture</u>		<u>Percent</u>
1.	Melanoplus mexicanus-----	64	1.	Melanoplus mexicanus-----	1
2.	Melanoplus femur-rubrum-----	12	2.	Ageneotettix deorum-----	1
3.	Ageneotettix deorum-----	9	3.	Spharagemon collare-----	
4.	Camnula pellucida-----	5	4.	Melanoplus femur-rubrum-----	
5.	Arphia pseudonietana-----	2	5.	Arphia pseudonietana-----	
6.	12 other species-----	4	6.	8 other species-----	
7.	Nymphs-----	4	7.	Nymphs-----	
<u>Roadside</u>			<u>Legumes</u>		
1.	Melanoplus mexicanus-----	61	1.	Melanoplus mexicanus-----	5
2.	Melanoplus femur-rubrum-----	13	2.	Melanoplus femur-rubrum-----	2
3.	Ageneotettix deorum-----	12	3.	Ageneotettix deorum-----	
4.	Camnula pellucida-----	2	4.	Camnula pellucida-----	
5.	Arphia pseudonietana-----	2	5.	Tettigoniidae-----	
6.	13 other species-----	7	6.	9 other species-----	
7.	Nymphs-----	3	7.	Nymphs-----	
<u>Small grain</u>			<u>Idle land</u>		
1.	Melanoplus mexicanus-----	49	1.	Melanoplus mexicanus-----	6
2.	Melanoplus femur-rubrum-----	35	2.	Melanoplus femur-rubrum-----	1
3.	Tettigoniidae-----	3	3.	Ageneotettix deorum-----	
4.	Ageneotettix deorum-----	2	4.	Arphia pseudonietana-----	
5.	Melanoplus angustipennis-----	2	5.	Camnula pellucida-----	
6.	7 other species-----	4	6.	9 other species-----	
7.	Nymphs-----	5	7.	Nymphs-----	
<u>Native hay</u>			<u>Tame hay</u>		
1.	Melanoplus mexicanus-----	64	1.	Melanoplus mexicanus-----	4
2.	Melanoplus femur-rubrum-----	18	2.	Melanoplus femur-rubrum-----	3
3.	Camnula pellucida-----	4	3.	Tettigoniidae-----	8
4.	Ageneotettix deorum-----	3	4.	Camnula pellucida-----	2
5.	Tettigoniidae-----	2	5.	Ageneotettix deorum-----	2
6.	10 other species-----	4	6.	8 other species-----	4
7.	Nymphs-----	5	7.	Nymphs-----	6
<u>Woods and stream</u>			<u>Row Crops</u>		
1.	Melanoplus femur-rubrum-----	35	1.	Melanoplus mexicanus-----	75
2.	Melanoplus mexicanus-----	33	2.	Camnula pellucida-----	6
3.	Ageneotettix deorum-----	8	3.	Spharagemon collare-----	6
4.	Tettigoniidae-----	8	4.	Ageneotettix deorum-----	4
5.	Arphia pseudonietana-----	2	5.	Melanoplus flavidus-----	2
6.	8 other species-----	7	6.	4 other species-----	5
7.	Nymphs-----	7	7.	Nymphs-----	2

MICHIGAN (Continued)

	<u>Grand total</u>	<u>Percent</u>
1. <i>Melanoplus mexicanus</i> -----		60
2. <i>Melanoplus femur-rubrum</i> -----		16
3. <i>Ageneotettix deorum</i> -----		8
4. <i>Camnula pellucida</i> -----		3
5. Tettigoniidae-----		2
6. 16 other species-----		7
7. Nymphs-----		4

MINNESOTA

This is the fifth year that collections have been made in Minnesota. During the season of 1939 there was some misunderstanding regarding the making of collections during the adult survey. Therefore, there are no collections from the southwest quarter, where Melanoplus differentialis was the dominant species. All of the collections for the eight designated environments are from the northwestern part of the State. The eastern part of the State is represented by a combined crop-and-pasture classification.

There were 9,185 specimens in the collections, representing 22 species. In the northwestern part of the State Melanoplus bivittatus was dominant in sweetclover, alfalfa, corn, and flax. Camnula pellucida was dominant in the bluegrass, quackgrass, and short-grass pastures. M. mexicanus was the most numerous in collections from small grain, potatoes, and field margins. In the eastern part of the State M. femur-rubrum was by far the dominant species in all environments. M. mexicanus and M. bivittatus have increased in relative abundance over 1938.

The situation in Minnesota in the 1939 survey resolved itself into three rather distinct problems. The most severe infestations were in the western two or three tiers of counties, extending north and south throughout the length of the State. This area was divided into two parts, owing to the differences in the important species. In the counties north of Wilkin County the dominant species was M. mexicanus. M. bivittatus was of first importance and Camnula pellucida of second importance. South of Wilkin County, in the southwestern part of the State, M. differentialis was the dominant species, with infestations along field margins and egg pods averaging 58 per square foot along some of the field edges. The third area of infestation lies in the east-central part where M. femur-rubrum was dominant, almost to the exclusion of the other species just mentioned.

Distribution by species of 9,185 specimens collected in Minnesota, expressed in percentage of total number collected in each habitat

Species	Sweet-clover alfalfa	Corn	Flax	Blue-grass quack-grass	Short-grass pasture	Pota- toes	Field margins	Eastern crop and pasture	Small grain	Total Speci- mens	Percent- age of grand total
<i>Aeropedellus clavatus</i>	---	1.96	---	1.96	---	---	---	---	0.13	18	0.20
<i>Ageneotettix deorum</i>	---	---	0.43	.65	1.37	---	0.60	---	.27	26	.28
<i>Arphia pseudonietana</i>	---	---	---	---	---	---	1.80	.07	---	14	.15
<i>Carmula pellucida</i>	1.74	1.96	2.55	22.51	35.24	1.71	8.71	.36	34.36	1080	11.75
<i>Chortippus longicornis</i>	.41	5.88	.43	4.73	3.20	---	14.71	.50	.27	195	2.12
<i>Dissosteira carolina</i>	.10	.98	.21	.33	.23	.86	.30	.07	.13	16	.17
<i>Enaept. serdidae costalis</i>	.20	.98	.43	10.76	17.84	---	3.30	.03	1.20	271	2.95
<i>Melanoplus angustipennis</i>	.92	---	1.28	1.14	1.14	---	1.20	---	.27	53	.58
<i>M. bivittatus</i>	31.99	31.38	35.32	18.76	7.55	25.64	15.63	2.04	9.36	1366	14.86
<i>M. confusus</i>	---	---	1.70	.82	.69	---	.60	---	.80	35	.38
<i>M. dawsoni</i>	7.69	6.86	2.13	13.38	14.65	2.56	14.41	1.97	2.14	570	6.20
<i>M. differentialis</i>	---	---	---	---	---	---	---	2.25	---	63	.69
<i>M. femur-rubrum</i>	22.35	16.67	16.60	4.08	4.12	20.51	9.31	24.96	9.36	3209	34.91
<i>M. gladstoni</i>	.61	---	.85	.65	.46	2.56	1.20	.43	.80	59	.64
<i>M. infantilis</i>	.15	---	.85	1.63	---	1.71	3.00	---	.67	49	.53
<i>M. mexicanus</i>	29.93	26.47	34.03	13.86	11.44	41.03	23.43	1.50	38.77	1809	19.68
<i>M. keeleri luridus</i>	---	---	---	---	---	---	---	.29	---	8	.09
<i>M. packardii</i>	3.69	5.88	2.55	1.47	.69	2.56	---	---	1.07	130	1.41
<i>Orphulella pelidna</i>	---	---	.43	1.31	---	---	---	.03	---	11	.12
<i>Orphulella speciosa</i>	---	---	---	---	---	---	---	.11	---	3	.03
<i>Phoetaliotes nebrascensis</i>	---	.98	---	1.63	.92	---	1.20	.50	.13	44	.48
<i>Spharagenon collare</i>	.20	---	.21	.33	.46	.86	.60	---	.27	20	.22
<i>Nymphs</i>	---	---	---	---	---	---	---	4.87	---	136	1.48
Total specimens per environment	1,951	204	470	613	874	117	666	2,794	1,496	9,185	---

MINNESOTA

The percentages of individuals of the various species present in Minnesota, arranged according to crops infested, are summarized as follows:

<u>Sweetclover and alfalfa</u>		<u>Percent</u>	<u>Corn</u>		<u>Percent</u>
1.	Melanoplus bivittatus-----	32	1.	Melanoplus bivittatus-----	1
2.	Melanoplus mexicanus-----	30	2.	Melanoplus mexicanus-----	6
3.	Melanoplus femur-rubrum-----	22	3.	Melanoplus femur-rubrum-----	7
4.	Melanoplus dawsoni-----	8	4.	Melanoplus dawsoni-----	7
5.	Melanoplus packardii-----	4	5.	Chortippus longicornis-----	6
6.	8 other species-----	4	6.	Melanoplus packardii-----	6
			7.	5 other species-----	7
<u>Flax</u>			<u>Bluegrass and quackgrass</u>		
1.	Melanoplus bivittatus-----	35	1.	Camnula pellucida-----	3
2.	Melanoplus mexicanus-----	34	2.	Melanoplus bivittatus-----	9
3.	Melanoplus femur-rubrum-----	17	3.	Melanoplus mexicanus-----	4
4.	Camnula pellucida-----	3	4.	Melanoplus dawsoni-----	3
5.	Melanoplus packardii-----	3	5.	Encoptolophus sordidus costalis	1
6.	11 other species-----	8	6.	13 other species-----	0
<u>Shortgrass pasture</u>			<u>Potatoes</u>		
1.	Camnula pellucida-----	35	1.	Melanoplus mexicanus-----	1
2.	Encoptolophus sordidus costalis	18	2.	Melanoplus bivittatus-----	6
3.	Melanoplus dawsoni-----	15	3.	Melanoplus femur-rubrum-----	0
4.	Melanoplus mexicanus-----	11	4.	Melanoplus dawsoni-----	3
5.	Melanoplus bivittatus-----	8	5.	Melanoplus gladstoni-----	3
6.	10 other species-----	13	6.	Melanoplus packardii-----	3
			7.	4 other species-----	4
<u>Field margins</u>			<u>Eastern crop and pasture</u>		
1.	Melanoplus mexicanus-----	23	1.	Melanoplus femur-rubrum-----	5
2.	Melanoplus bivittatus-----	16	2.	Melanoplus differentialis-----	2
3.	Chortippus longicornis-----	15	3.	Melanoplus bivittatus-----	2
4.	Melanoplus dawsoni-----	14	4.	Melanoplus dawsoni-----	2
5.	Melanoplus femur-rubrum-----	9	5.	Melanoplus mexicanus-----	1
6.	11 other species-----	23	6.	11 other species-----	3
			7.	Nymphs-----	5
<u>Small grain</u>			<u>Grand total</u>		
1.	Melanoplus mexicanus-----	39	1.	Melanoplus femur-rubrum-----	5
2.	Camnula pellucida-----	34	2.	Melanoplus mexicanus-----	0
3.	Melanoplus bivittatus-----	9	3.	Melanoplus bivittatus-----	5
4.	Melanoplus femur-rubrum-----	9	4.	Camnula pellucida-----	2
5.	Melanoplus dawsoni-----	2	5.	Melanoplus dawsoni-----	6
6.	12 other species-----	7	6.	17 other species-----	2

MISSOURI

This is the second year in which Missouri has been included in the making of collections in typical habitats. Grasshopper populations are at a low ebb and it was difficult to obtain a good representative number of specimens. There were 444 specimens collected in 5 different environments. In these collections 14 species were represented. Melanoplus differentialis was the dominant species in the total number of specimens collected in the State. In the small number collected in small grain M. mexicanus was most numerous. There were too few specimens in any environment to permit definite conclusions.

MISSOURI

Distribution by species of 444 specimens collected in Missouri, expressed in percentage of total number collected in each habitat

Species	Pasture	Field margin	Corn	Legumes	Small grain	Total specimens	Percentage of grand total
Ageneotettix deorum	3.45	---	---	1.10	---	4	0.90
Chortophaga viridifasciata	---	---	---	---	2.27	1	.22
Chloecalis conspersa Harr.	---	---	---	.55	---	1	.22
Dichromorpha viridis Scudd.	---	---	---	.55	---	1	.22
Hesperotettix speciosus	3.45	---	1.60	.55	---	5	1.13
Hesperotettix viridis pratensis	---	2.78	---	---	---	1	.22
Hippiscus rugosus	6.90	---	---	3.87	---	11	2.43
Melanoplus bivittatus	1.72	8.33	4.00	3.31	---	15	3.38
M. differentialis	70.69	77.78	82.40	49.72	22.73	272	61.26
M. femur-rubrum	10.34	2.78	4.00	13.81	11.36	42	9.46
M. mexicanus	---	---	1.60	6.08	25.00	24	5.40
M. s. scudder (Uhler)	1.72	---	---	1.66	---	4	.90
Schistocerca a. americana	---	---	3.20	2.76	6.82	12	2.70
Syrbula admirabilis	---	---	---	.55	---	1	.22
Undetermined	---	8.33	---	.55	---	4	.90
Nymphs	1.72	---	3.20	14.92	31.82	46	10.36
Total specimens per environment	58	36	125	181	44	444	---

MISSOURI

The percentages of individuals of the various species present in Missouri, ranged according to crops infested, are summarized as follows:

<u>Pasture</u>	<u>Percent</u>	<u>Field margin</u>	<u>Percent</u>
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Melanoplus differentialis--	71	1. Melanoplus differentialis--	78
M. femur-rubrum-----	10	2. M. bivittatus-----	8
Hippiscus rugosus-----	7	3. Undetermined-----	8
Ageneotettix deorum-----	3	4. Hesperotettix vir. pratensis	3
Hesperotettix speciosus----	3	5. M. femur-rubrum-----	3
2 other species and nymphs	6		

Corn

Legumes

Melanoplus differentialis--	82	1. Melanoplus differentialis--	50
M. bivittatus-----	4	2. M. femur-rubrum-----	14
M. femur-rubrum-----	4	3. M. mexicanus-----	6
Schistocerca a. americana--	3	4. Hippiscus rugosus-----	4
2 other species and nymphs-	7	5. M. bivittatus-----	3
		6. Schistocerca a. americana--	3
		7. 7 other species and nymphs-	20

Small grain

Grand total

Melanoplus mexicanus-----	25	1. Melanoplus differentialis--	61
M. differentialis-----	23	2. M. femur-rubrum-----	9
M. femur-rubrum-----	11	3. M. mexicanus-----	5
Schistocerca a. americana--	7	4. M. bivittatus-----	3
Chortophaga viridifasciata-	2	5. Schistocerca a. americana--	3
Nymphs-----	32	6. 10 other species and nymphs	19

MONTANA

This is the sixth year in which collections have been made in Montana during the adult survey. There were 10,542 specimens representing 59 species collected in 11 different major environments. Melanoplus mexicanus was the dominant species in 10 out of the 11 habitats and formed 46 percent of the total number of specimens collected. Ageneotettix deorum was second in total numbers collected and first in numbers on the range land. Outside of the open range, no other species compared with M. mexicanus in importance. In 1938 M. mexicanus formed 54 percent of the total specimens collected in the range land, but in 1939 it made up only 17 percent of the total. The comparative percentages in the following table show the decrease in relative abundance of this species from 1938 to 1939.

Table 12--M. mexicanus, percentage of total number of specimens collected in the major habitats

Habitat	Percentage of total collected	
	1938	1939
Small grain-----	82	73
Idle land-----	83	67
Roadside-----	62	54
Range land-----	54	17
Alfalfa-----	46	59
Total for State-----	63	46

These data indicate a falling off of the relative abundance of M. mexicanus for the State as a whole, although it is a serious problem in 7 north-central counties. At least 90 percent of the severe infestation are in small-grain stubble and idle land. In Hill County there was an average of 7.09 pods per square foot recorded in 915 field samples taken in 109 fields. This is the heaviest infestation on record since the present annual grasshopper surveys were established in 1931. The infestations in the 7 north-central counties result from flights of M. mexicanus originating in the eastern part of the State in July and August.

MONTANA (Continued)

Species	Road-side	Range	Idle land	Small grain	Low mtn. range	Alfalfa sweet clover	Misc. row crops	Crested wheat grass	Flax	Weedy pasture	Bottom land	Total specimens	Percentage of grand total
M. bruneri	--	--	--	0.13	--	--	--	--	--	--	--	2	0.02
M. dawsoni	--	0.41	--	--	1.60	--	--	--	--	--	0.26	18	.17
M. differentialis	0.99	--	--	.20	--	--	--	--	--	--	--	23	.22
M. femur-rubrum	3.47	.49	4.38	1.28	.53	14.80	5.33	0.88	4.26	2.70	25.80	434	4.12
M. gladstoni	5.90	4.01	4.16	2.22	1.60	1.69	--	7.96	4.74	3.78	--	403	3.82
M. infantilis	2.13	6.14	1.08	1.28	5.35	1.06	2.67	9.27	3.32	.54	.80	342	3.24
M. lakinus	--	--	--	--	--	5.92	--	--	--	--	--	56	.53
M. mexicanus	53.69	16.70	66.62	73.53	26.74	59.41	80.00	47.79	75.35	32.97	40.69	4,826	45.78
M. occidentalis	--	.26	.22	.27	1.60	--	--	--	--	--	--	19	.18
M. oregonensis Thos.	--	--	--	.13	--	--	--	--	--	--	--	2	.02
M. packardii	6.64	1.20	9.11	6.94	6.42	4.55	10.67	7.96	4.26	2.70	1.06	526	4.99
Mermiria maculipennis macclungi	--	.30	--	--	--	--	--	--	--	--	--	10	.09
Mestobregma p. plattei Thos.	--	1.15	--	--	--	--	--	--	--	--	--	5	.05
Metator pardalinus Sauss.	.54	3.58	.36	.13	.53	.11	--	.88	--	9.73	1.86	170	1.61
Opela obscura Thos.	.20	1.34	--	--	.53	--	--	--	--	3.73	6.12	81	.77
Orphulella speciosa	--	.06	--	--	--	--	--	--	--	--	1.86	9	.08
Philibostroma quadrimaculatum	.64	9.69	.14	--	2.14	--	--	--	--	4.32	.53	362	3.43
Phoetaliotes nebrascensis	.54	1.95	.14	.27	1.60	.11	--	--	.47	.54	4.25	106	1.01
Pseudopomala brachyptera	--	.03	--	--	--	--	--	--	--	--	--	1	.01
Schistocerca lineata	--	.06	--	--	.53	--	--	--	--	.54	.53	6	.06
Spharagemon collaris	.44	--	.36	.13	--	.74	--	.44	.47	--	--	25	.24
Spharagemon equale	2.77	2.07	2.72	.87	--	.74	1.33	3.10	2.37	.54	.80	202	1.92
Trachyrhachis k. kiowa	1.90	5.90	.29	--	1.60	.11	--	.44	.47	3.78	1.59	265	2.51
Trimerotropis campestris	.10	.03	--	--	1.60	--	--	--	--	--	--	6	.06
Trimerotropis laticincta	.54	.12	.22	.07	--	.53	--	--	.47	--	--	25	.24
T. gracilis sordida Walk.	.20	.03	--	--	1.60	--	--	--	--	--	--	8	.07
T. pistrinaria Sauss.	--	.26	--	--	1.07	--	--	--	--	--	--	11	.10
T. suffusus Scudd.	--	--	--	--	1.07	--	--	--	--	--	--	2	.01
T. pallidipennis	--	--	.14	--	--	--	--	--	--	--	.80	5	.05
Nymphs	6.83	4.39	3.66	2.69	--	4.65	--	15.49	--	2.16	--	463	4.39
Total specimens per environment	2,019	3,438	1,394	1,485	187	946	75	226	211	185	376	10,542	--

MONTANA

The percentages of individuals of the various species present in Montana, arranged according to crops infested, are summarized as follows:

<u>Roadside</u>	<u>Percent</u>	<u>Range</u>	<u>Percent</u>
Melanoplus mexicanus-----	54	1. Ageneotettix deorum-----	18
M. packardii-----	7	2. M. mexicanus-----	17
M. gladstoni-----	6	3. Phlibostroma quadrimaculatum	10
M. femur-rubrum-----	3	4. M. infantilis-----	6
Spharagemon equale-----	3	5. Aulocara elliotti-----	6
30 other species and nymphs	27	6. Trachyrhachis k. kiowa-----	6
		7. 41 other species and nymphs	37
<u>Idle land</u>		<u>Small grain</u>	
Melanoplus mexicanus-----	67	1. Melanoplus mexicanus-----	73
M. packardii-----	9	2. M. packardii-----	7
M. femur-rubrum-----	4	3. M. a. angustipennis-----	2
M. gladstoni-----	4	4. Dissosteira carolina-----	2
Spharagemon equale-----	3	5. M. gladstoni-----	2
23 other species and nymphs	13	6. 24 other species and nymphs	14
<u>Low mountain range</u>		<u>Alfalfa and sweetclover</u>	
Melanoplus mexicanus-----	27	1. Melanoplus mexicanus-----	59
Bruneria brunnea-----	13	2. M. femur-rubrum-----	15
Ageneotettix deorum-----	11	3. M. lakinus-----	6
M. packardii-----	6	4. M. packardii-----	4
M. infantilis-----	5	5. M. bivittatus-----	3
29 other species-----	38	6. 15 other species and nymphs	13
<u>Misc. row crops</u>		<u>Crested wheatgrass</u>	
Melanoplus mexicanus-----	80	1. Melanoplus mexicanus-----	48
M. packardii-----	11	2. M. infantilis-----	9
M. femur-rubrum-----	5	3. M. gladstoni-----	8
M. infantilis-----	3	4. M. packardii-----	8
Spharagemon equale-----	1	5. Ageneotettix deorum-----	3
		6. Spharagemon equale-----	3
		7. 8 other species and nymphs-	21
<u>Flax</u>		<u>Weedy pasture</u>	
Melanoplus mexicanus-----	75	1. Melanoplus mexicanus-----	33
M. gladstoni-----	5	2. Metator pardalinus-----	10
M. femur-rubrum-----	4	3. Ageneotettix deorum-----	6
M. packardii-----	4	4. Aulocara elliotti-----	5
M. infantilis-----	3	5. Amphitornus coloradus-----	4
7 other species-----	9	6. Cammula pellucida-----	4
		7. Phlibostroma quadrimaculatum	4
		8. 19 other species and nymphs-	34

MONTANA (Continued)

<u>Bottom land</u>	<u>Percent</u>	<u>Grand total</u>	<u>Percent</u>
1. Melanoplus mexicanus-----	41	1. Melanoplus mexicanus-----	4
2. M. femur-rubrum-----	26	2. Ageneotettix deorum-----	
3. Opeia obscura-----	6	3. M. packardii-----	
4. Phoetaliotes nebrascensis--	4	4. M. femur-rubrum-----	
5. Encoptolophus sordidus		5. M. gladstoni-----	
costalis---	3	6. 54 other species and nymphs	3
6. 23 other species-----	20		

NEBRASKA

This is the fourth year in which collections have been made in this State, and 24,363 specimens, including 54 species, were collected in 10 major environments. For the collections as a whole, Melanoplus mexicanus was dominant, with M. differentialis and M. bivittatus of equal importance in second and third places and Melanoplus femur-rubrum fourth. In the upland and sand-hill grasslands, Ageneotettix deorum was the most numerous, whereas in the bottom-land grasses M. femur-rubrum was dominant. This indicates a decided reduction of M. mexicanus on the range land, where it was the dominant species in 1938. In fact, the relative abundance of M. mexicanus has fallen off in all the environments. For instance, in 1938 it was dominant in all of 7 habitats included in the collections, forming from 29 to 46 percent of the total number of specimens collected in these places and 32 percent of the total number collected in the State. In 1939 it was dominant in only 4 out of the 9 habitats included in the collections, forming in these 4 habitats from 20 to 37 percent of the total number collected in these environments and 25 percent of the total number collected in the State. On the other hand, M. differentialis and M. bivittatus have increased in relative abundance but not necessarily in actual numbers. Therefore, there is no doubt that M. mexicanus has decreased in importance in Nebraska.

The largest areas of severe infestation extend diagonally across the eastern third of the State, from the northeast to the southwest. These infestations are made up largely of M. differentialis and M. bivittatus as far west as the western edge of Valley, Sherman, Buffalo, Kearney, and Franklin Counties. They occur in sorghum and corn stubble, field margins, alfalfa, and small-grain stubble. In the south-central and central parts of the State the infestations are lighter and of a mixed population, with M. mexicanus becoming more important to the westward. In the Panhandle area, where M. mexicanus was numerous in 1939, the egg survey showed that infestations had decreased.

NEBRASKA

Distribution by species of 24,363 specimens collected in Nebraska, expressed in percentage of total number collected in each habitat

Species	Stub- ble	Sor- ghum	Corn	Alfal- fa	Sugar beets	Road- side	Restor- ation land	Upland grasses	Bottom- land grasses	Sand hill grasses	Total speci- mens	Per- cent- age of grand total
<i> Aeoloplus turnbullii Aeoloplus t. turnbullii Ageneotettix deorum Amphitornus coloradus Arphia p. pseudonietana Aulocara elliotti Boopedor nubilum Brachystola magna Camnula pellucida Campylacantha o. olivacea Cordillacris crenulata C. occipitalis Thos. Derotema haydenii Dissosteira carolina Dissosteira longipennis Drepanopterna femoratum Encyrtolophus sordidus costalis Hadrotettix trifasciatus Hesperotettix speciosus H. viridis pratensis Hippiscus rugosus Hypochlora alba Melanoplus a. angustipennis M. bivittatus M. bowditchi Scudd. M. confusus Scudd. M. differentialis Melanoplus femur-rubrum </i>	5.42 2.34 2.98 -- .01 1.99 .08 -- -- -- -- -- -- -- .11 .08 .05 -- -- -- .08 .08 -- .01 .03 6.60 10.70 -- -- 6.70 13.02	-- 1.89 5.90 -- -- 3.30 .24 -- -- -- -- -- -- -- .12 -- -- .12 -- .71 .12 -- -- 2.01 33.65 -- -- 19.48 2.71	0.34 .14 .14 -- -- -- -- -- -- -- -- -- -- -- .02 -- -- -- -- -- .14 -- -- .27 30.86 -- -- 52.06 5.55	1.42 .39 1.58 .04 .44 -- -- .02 -- -- -- -- -- -- .24 .02 -- -- .02 .06 -- -- 4.62 18.10 -- .02 17.97 9.81	-- 0.89 -- -- -- .89 -- -- -- -- -- -- -- -- -- -- -- -- .07 .16 .14 .05 -- 1.78 22.25 -- -- 38.87 11.87	6.90 3.37 2.58 -- -- .46 .05 .05 -- -- -- .04 .04 -- .32 .05 -- -- .58 .12 .14 .05 -- 3.81 14.54 -- -- 17.73 13.57	-- 2.66 .61 -- -- .61 -- -- -- -- .04 .04 .08 .08 .04 -- -- .33 .57 .08 -- -- 25.20 4.75 .16 -- 3.48 1.47	0.81 2.59 25.89 4.88 .51 .44 1.17 -- -- -- .05 .05 -- .05 .30 3.05 -- .56 .12 .12 .23 .12 .20 .41 5.80 .10 .05 -- .20 .61	3.84 .46 3.72 .58 -- 5.59 -- -- -- .46 .35 .58 -- -- 5.35 .58 .12 .12 .23 .12 .23 .12 .20 -- 1.75 3.14 -- -- .23 41.09	-- -- 27.45 5.25 .08 1.90 -- -- -- -- -- -- .23 .08 -- -- .53 -- .73 .68 .68 15.66 .15 2.58 -- .23 3.88	756 451 1339 172 12 450 32 2 1 1 6 11 41 9 9 107 5 42 34 21 17 19 1766 3081 39 1 3153 2444	3.10 1.85 5.50 .70 .05 1.85 .13 .008 .004 .004 .02 .04 .17 .04 .04 .44 .02 .17 .14 .09 .07 .08 7.25 12.65 .16 .004 12.94 10.03

Species	Stub- ble	Sor- ghum	Corn	Alfal- fa	Sugar beets	Road- side	Restor- ation land	Upland grasses	Bottom land grasses	Sand hill grasses	Total speci- mens	Perccn- tage of grand total
Melanoplus f. flavidus Scudd.	1.48	--	--	0.20	0.30	0.14	11.87	0.05	0.35	1.07	425	1.74
M. foedus fluviatilis Brun.	.33	--	1.03	.52	--	.74	--	--	--	--	92	.38
M. foedus foedus	3.14	0.83	.34	1.40	4.15	2.21	9.78	1.47	1.05	2.43	590	2.83
M. gladstoni	.32	--	--	.11	--	.02	.16	.10	.23	.91	46	.19
M. infantilis	--	--	--	--	--	--	.04	--	.35	.08	5	.02
M. lakinus	.16	.12	--	.09	--	.44	--	.05	.12	--	36	.15
M. mexicanus	37.28	18.30	7.27	24.47	18.40	20.00	29.30	22.89	8.38	11.79	6,031	24.75
M. occidentalis	.03	--	--	.09	--	.05	.04	.46	--	.08	19	.08
M. packardii	2.90	1.53	.27	2.03	--	1.25	5.12	1.17	.46	.08	499	2.04
M. regalis Dodge	--	--	--	--	--	--	--	.20	--	.08	5	.02
Mermiria maculipennis	.35	1.77	--	0.17	--	.88	.08	1.27	1.16	3.12	161	.66
Mermiria neomexicana	--	--	--	--	--	.02	--	--	--	--	1	.004
Metator pardalinus	--	--	--	--	--	--	.04	.05	1.63	--	16	.06
Opeia obscura	--	.12	--	--	--	.09	.08	1.37	6.75	1.29	109	.45
Orphulella p. pelidna	.01	--	--	--	--	.05	.33	.20	.46	4.18	74	.30
Pardalophora haldemani	--	--	--	--	--	--	--	--	.23	--	2	.008
Paropomala wyomingensis	--	--	--	--	--	--	--	--	.12	--	1	.004
Phlibostroma quadrimaculatum	.05	.12	--	--	--	.07	.04	6.97	3.14	6.39	256	1.05
Phoetaliotes nebrascensis	.25	1.30	--	.09	--	.56	.16	4.07	.35	1.37	160	.66
Schistocerca lineata	.01	--	--	--	--	--	.04	.05	--	--	3	.01
Spharagemon collare	.37	.12	--	.09	--	.16	1.72	.46	.58	4.94	156	.64
Spharagemon equale	.11	--	--	.15	--	.07	--	.66	--	--	30	.12
Syrbula admiralis	--	--	--	--	--	--	--	--	.58	--	5	.02
Trachyrhachis k. kiowa	--	--	--	--	--	--	.12	.41	1.05	1.37	38	.15
Trimerotropis laticincta	--	--	--	--	--	--	.04	--	--	--	2	.008
Undetermined	.03	--	--	--	--	.09	.04	.71	--	.08	22	.09
Nymphs	2.84	5.55	1.58	15.73	0.59	9.29	.74	1.47	4.66	--	1,458	5.98
Total specimens per environment	6,269	247	1,458	4,568	337	4,304	2,440	1,966	359	1,315	24,363	--

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NEBRASKA

The percentages of individuals of the various species present in Nebraska arranged according to crops infested, are summarized as follows:

Stubble

Percent

1. <i>Melanoplus mexicanus</i> -----	37
2. <i>M. femur-rubrum</i> -----	13
3. <i>M. bivittatus</i> -----	11
4. <i>M. differentialis</i> -----	7
5. <i>M. a. angustipennis</i> -----	7
6. 26 other spp., undet., and nymphs-----	25

Sorghum

Percent

1. <i>Melanoplus bivittatus</i> -----	34
2. <i>M. differentialis</i> -----	19
3. <i>M. mexicanus</i> -----	18
4. <i>Ageneotettix deorum</i> -----	6
5. <i>Aulocara ellioti</i> -----	3
6. 16 other spp., and nymphs----	20

Corn

1. <i>Melanoplus differentialis</i> --	52
2. <i>M. bivittatus</i> -----	31
3. <i>M. mexicanus</i> -----	7
4. <i>M. femur-rubrum</i> -----	6
5. <i>M. foedus fluviatilis</i> -----	1
6. 7 other spp., and nymphs----	3

Alfalfa

1. <i>Melanoplus mexicanus</i> -----	24
2. <i>M. bivittatus</i> -----	18
3. <i>M. differentialis</i> -----	18
4. <i>M. femur-rubrum</i> -----	10
5. <i>M. a. angustipennis</i> -----	5
6. 23 other spp., and nymphs----	25

Sugar beets

1. <i>Melanoplus differentialis</i> --	39
2. <i>M. bivittatus</i> -----	22
3. <i>M. mexicanus</i> -----	18
4. <i>M. femur-rubrum</i> -----	12
5. <i>M. foedus foedus</i> -----	4
6. 4 other spp., and nymphs----	5

Roadside

1. <i>Melanoplus mexicanus</i> -----	20
2. <i>M. differentialis</i> -----	18
3. <i>M. bivittatus</i> -----	14
4. <i>M. femur-rubrum</i> -----	14
5. <i>Aeoloplus turnbullii bruneri</i> 7	
6. 27 other spp., undet., nymphs 27	

Restoration land

1. <i>Melanoplus mexicanus</i> -----	29
2. <i>M. a. angustipennis</i> -----	25
3. <i>M. f. flavidus</i> -----	12
4. <i>M. foedus foedus</i> -----	10
5. <i>M. packardii</i> -----	5
6. 28 other spp., undet., and nymphs-----	19

Upland grasses

1. <i>Ageneotettix deorum</i> -----	26
2. <i>M. mexicanus</i> -----	23
3. <i>Aulocara ellioti</i> -----	8
4. <i>Phlibostroma quadrimaculatum</i> 7	
5. <i>M. a. angustipennis</i> -----	6
6. 34 other spp., undet., and nymphs-----	30

Bottom-land grasses

1. <i>Melanoplus femur-rubrum</i> ----	41
2. <i>M. mexicanus</i> -----	8
3. <i>Opeia obscura</i> -----	7
4. <i>Aulocara ellioti</i> -----	6
5. <i>Drepanopterna femoratum</i> ----	5
6. 31 other spp., and nymphs--	33

Sandhill grasses

1. <i>Ageneotettix deorum</i> -----	27
2. <i>M. a. angustipennis</i> -----	16
3. <i>M. mexicanus</i> -----	12
4. <i>Spharagemon collare</i> -----	5
5. <i>Orphulella p. pelidna</i> -----	4
6. 24 other spp., and undet.,	36

Grand total

Percent

1. <i>Melanoplus mexicanus</i> -----	25
2. <i>M. differentialis</i> -----	13
3. <i>M. bivittatus</i> -----	13
4. <i>M. femur-rubrum</i> -----	10
5. <i>M. a. angustipennis</i> -----	7
6. 48 other spp., undet., and nymphs-----	32

NEVADA

This is the second year that collections were made in Nevada during the adult survey. A total of 5,583 specimens of grasshoppers were collected in 4 typical habitats and 23 species were recorded. In the 1938 collections Melanoplus mexicanus was called M. devastator, and in the 1939 collections, M. mexicanus. This species is the most important in the State, forming 56 percent of the total number of specimens collected; however, in the Smoky Valley areas M. occidentalis was the most important range-land grasshopper, but none appeared in the collections.

According to Skoog, all of the specimens listed as Melanoplus mexicanus in the 1939 Nevada collections probably belong to the race bilituratus Walk. There is however, some conflicting opinion regarding the correct classification of this Nevada material, and until a definite understanding is reached on what to call it, it will all be called M. mexicanus.

NEVADA

Distribution by species of 5,583 specimens collected in various habitats of Nevada,
expressed in percentages of total numbers collected in each habitat

Species	Alfalfa	Range	Wild hay	Small grain	Total specimens	Percentage of grand total
<i>Aeoloplus</i> (sp.)	0.03	0.16	--	--	3	0.05
<i>Ageneotettix</i> deorum	--	.08	--	--	1	.02
<i>Amphitornus</i> (sp.)	--	.08	0.20	--	2	.03
<i>Arphia</i> pseudonietana	.22	2.00	--	--	33	.59
<i>Aulocara</i> ellioti	.47	2.72	--	--	51	.91
<i>Camnula</i> pellucida	.72	.24	54.66	--	298	5.33
<i>Chortippus</i> longicornis	.05	--	--	--	2	.03
<i>Conozoa</i> wallula Scudd.	3.81	28.19	1.42	--	496	8.88
<i>Dissosteira</i> carolina	--	.08	--	--	1	.02
<i>Eremiacris</i>	--	.96	--	--	12	.21
<i>Hesperotettix</i> (sp.)	.03	.16	--	--	3	.05
<i>Melanoplus</i> bivittatus	5.20	.08	2.44	0.39	201	3.60
<i>Melanoplus</i> femur-rubrum	3.81	1.28	20.12	--	252	4.51
<i>Melanoplus</i> foedus foedus	--	.24	--	--	3	.05
<i>Melanoplus</i> mexicanus	62.02	37.73	18.08	98.84	3,047	54.54
<i>Melanoplus</i> packardii	10.20	4.65	.61	--	428	7.66
<i>Metator</i> nevadensis Brun.	--	.08	--	--	1	.02
<i>Oedaleonotus</i> enigma	.03	15.46	--	--	194	3.47
<i>Phaenaliotes</i> nebrascensis	.39	.16	.20	--	17	.30
<i>Schistocerca</i> shoshone Thos.	.19	.08	--	--	8	.14
<i>Spharagemon</i> collare	.03	--	--	--	1	.02
<i>Trimerotropis</i> latifasciata Scudd.	--	.08	--	--	1	.02

1
358
1

Species	Percentage of grand total				Total specimens	Percentage of grand total
	Alfalfa	Range	Wild hay	Small grain		
Trimerotropis pallidipennis Burm.	0.03	0.32	--	--	Number 5 523	0.09
Nymphs and undeveloped	12.43	5.05	2.24	0.77		9.36
Total specimens per environment	3,585	1,247	492	259	5,583	--

NEVADA

The percentages of individuals of the various species present in Nevada, arranged according to crops and habitats infested, are summarized as follows:

<u>Alfalfa</u>		<u>Percent</u>	<u>Range</u>		<u>Percent</u>
1.	Melanoplus mexicanus - -	62	1.	Melanoplus mexicanus - -	38
2.	Melanoplus packardii - -	10	2.	Conozoa wallula - - - -	28
3.	Melanoplus bivittatus -	5	3.	Oedaleonotus enigma - -	15
4.	Conozoa wallula - - - -	4	4.	Melanoplus packardii - -	5
5.	Melanoplus femur-rubrum	4	5.	Aulocara elliotti - - -	3
6.	11 other species - - - -	3	6.	15 other species - - - -	6
7.	Nymphs and undetermined-	12	7.	Nymphs and undetermined-	5
<u>Wild hay</u>			<u>Small grain</u>		
1.	Camnula pellucida - - -	55	1.	Melanoplus mexicanus - -	98
2.	Melanoplus femur-rubrum	20	2.	Melanoplus bivittatus -	1
3.	Melanoplus mexicanus - -	18	3.	Nymphs undetermined - -	1
4.	Melanoplus bivittatus -	2			
5.	Conozoa wallula - - - -	1			
6.	3 other species - - - -	2			
7.	Nymphs and undetermined-	2			
			<u>Grand total</u>		
			1.	Melanoplus mexicanus - -	54
			2.	Conozoa wallula - - - -	9
			3.	Melanoplus packardii - -	8
			4.	Camnula pellucida - - -	5
			5.	Melanoplus femur-rubrum	4
			6.	18 other species - - - -	11
			7.	Nymphs and undetermined-	9

NORTH DAKOTA

This is the sixth year in which collections of grasshoppers have been made in the major habitats of the State, and 18,313 specimens were collected in 8 different habitats, about 65 species being represented. Both small grain and native grasses were classified as to western and eastern, with the division line north and south through Bismarck. Melanoplus mexicanus was the dominant species in 7 out of the 8 environments and formed 37 percent of the total number of specimens collected. In the native grasslands, both eastern and western, Ageneotettix deorum was the dominant species. Compared with 1938, the 1939 collections showed a decrease in the relative abundance of M. mexicanus in all environments excepting small grain. Of the total number collected in the State, M. mexicanus decreased from 49 percent in 1938 to 37 percent in 1939. For the range land, M. mexicanus was the dominant species in 1938 at 32 percent of the total specimens collected, whereas in 1939 it was second in numbers in the eastern section, at 18 percent, and fourth in the western part, at 8 percent. This is a most decided decrease in general occurrence. M. bivittatus showed an increase in relative numbers. None of these data dispute the fact that there are extraordinarily severe infestations of M. mexicanus in eastern North Dakota. By far the greater number of the severe infestations lie in the northeastern part of the State, the severity of which has already been discussed in the first part of this report. The heavy infestation in this part of the State is due to two causes -- first, a local build-up of infestations which were not adequately poisoned during 1939, and second, during July and August there was a gradual but steady influx of migrating adults from the south as far as the northeastern part of South Dakota.

NORTH DAKOTA

Distribution by species of 18,313 specimens collected in North Dakota, expressed
in percentage of total number collected in each habitat

Species	Small grain (east)	Small grain (west)	Native grass (east)	Native grass (west)	Alfalfa sweet-clover	Idle land	Sorghum	Flax	Corn	Millet	Total specimens	Percentage of grand total
Acrolophus hirtipes	---	---	---	0.07	---	0.07	---	---	---	---	2	0.03
Aeoloplus turnbullii	0.04	0.46	---	.42	0.29	.40	---	---	---	0.16	33	.18
Aerochoreutes c. carlinianus Thos.	---	---	---	.03	---	---	---	---	---	---	1	.005
Aeropedellus clavatus	---	---	0.12	.07	.06	---	---	---	---	---	8	.04
Agencotettix deorum	5.18	3.85	24.32	22.86	12.07	8.83	2.52	1.82	0.60	1.47	2260	12.34
Amblycorypha oblongifolia Deg.	---	---	.29	---	---	---	---	---	---	---	12	.06
Amphitornus coloradus Thos.	---	.19	2.63	12.53	.35	.07	---	---	---	.16	479	2.61
Arphia conspersa conspersa Scudd.	---	---	---	.07	---	---	---	---	---	---	2	.01
Arphia p. pseudonietana	.04	---	.79	.45	---	---	---	---	---	---	47	.26
Arphia sp.	---	---	.02	---	---	---	---	---	---	---	1	.005
Aulocara elliotti	.41	1.04	.82	3.26	.12	.87	.23	.20	1.32	.74	193	1.05
Boopedon nubilum	---	---	---	.07	---	---	---	---	---	---	2	.01
Bruneria brunnea	---	---	.02	1.82	---	---	---	---	---	---	53	.29
Camula pellucida	2.00	2.94	2.12	6.58	1.58	.20	.69	.71	3.97	2.78	484	2.64
Chalcaltis conspersa Harr.	---	---	.02	.03	---	---	---	---	---	---	2	.01
Chortippus longicornis	.04	---	4.07	1.78	.12	---	---	---	---	---	223	1.22
Chortophaga viridifasciata	---	---	---	.03	---	---	---	---	---	---	1	.005
Circotettix rabula rabula	---	---	---	.03	---	---	---	---	---	---	1	.005
Cordillacris crenulata	---	---	---	.10	---	---	---	---	---	---	3	.02
Derotmena haydenii	---	---	.10	---	---	.13	---	---	---	---	6	.03
Dissosteira carolina	2.70	2.61	.05	---	.47	1.40	8.26	2.22	3.85	2.29	297	1.62
Drepanopterna femoratur	---	---	---	2.59	---	---	---	---	---	---	74	.40
Encoptolophus sordidus Burm.	---	---	.19	---	---	---	---	---	---	---	8	.04
E. sordidus costalis	.68	---	3.49	.87	.53	.80	.92	.91	---	.16	228	1.24
E. sordidus sordidus	---	---	.10	---	---	---	---	---	---	---	4	.02
Eritettix simplex tricarlinatus Thos.	---	---	---	.10	---	---	---	---	---	---	3	.02
Hadrotettix trifasciatus	.04	.46	.10	1.43	.06	.87	.23	---	1.03	.08	79	.43
Hesperotettix viridis	---	---	---	.03	---	---	---	---	---	---	1	.005
Hesperotettix viridis pratensis	.07	.39	.63	.80	.33	---	---	---	.24	---	64	.35
Hippiscus rugosus	---	---	---	.07	---	---	---	---	---	---	2	.01
Metanopius angustipennis	1.24	.29	.26	.07	.46	1.34	1.03	1.92	1.08	1.47	135	.74

Species	grain (east)	Small grain (west)	Native grass (east)	Native grass (west)	Alfalfa sweet- clover	Idle land	Sor- ghum	Flax	Corn	Millet	Total speci- mens	Percent- age of grand total
M. bivittatus	7.70	4.96	0.65	0.21	16.17	8.10	17.09	9.59	27.59	14.16	1357	7.41
M. bowditchi canus	--	--	--	.87	--	--	--	--	--	--	25	.14
M. confusus	--	--	--	.07	--	.07	--	--	--	--	3	.02
M. dawsoni	.22	.06	5.66	1.82	1.29	.47	.23	--	.36	.16	330	1.80
M. differentialis	1.43	4.24	--	--	2.53	.20	7.57	.20	3.73	4.91	291	1.59
M. femur-rubrum	8.86	1.96	1.35	.93	19.86	10.73	10.73	15.55	6.75	7.20	1242	6.78
M. f. flavidus	.15	--	.51	.07	.06	--	.34	--	--	--	31	.17
M. gladstoni	.22	--	4.32	.70	.47	.53	--	.40	--	--	246	1.34
M. infantilis	.04	.26	5.45	4.69	.70	.53	--	.10	--	.08	387	2.11
M. keeleri luridus	--	.06	.03	.14	--	--	--	--	--	--	19	.10
M. k. kennicotti Scudd.	--	--	--	.07	--	--	--	--	--	--	2	.01
M. mexicanus	60.10	70.82	17.77	7.56	35.44	44.98	36.70	53.13	38.31	55.73	6810	37.18
M. occidentalis	--	--	--	.25	--	--	--	--	--	--	8	.04
M. packardii	7.06	3.72	.99	1.50	7.15	14.26	11.01	5.66	8.19	7.20	972	5.31
Mermiria maculipennis macclungi	--	.06	--	.70	--	--	--	--	--	--	21	.11
Metator pardalinus	.19	.39	1.03	3.75	.06	.20	.11	--	--	--	168	.92
Neopedismopsis abouinalis Thos.	--	--	.17	.38	--	--	--	--	--	--	13	.10
Opeia obscura	--	--	3.08	1.82	--	--	--	--	.24	--	132	.99
Orphulella p. pelidna	--	--	2.77	.42	--	--	--	--	--	--	127	.69
Orphulella speciosa	--	--	3.35	.07	--	.07	--	--	--	--	142	.77
Pardalophora haldenani	--	--	.02	.03	--	--	--	--	--	--	2	.005
Phlibostroma quadrimaculatum	.04	--	1.73	11.73	--	.07	--	--	--	--	409	2.23
Phoetaliotes nebrascensis	.37	.19	3.93	1.47	.35	.67	.80	.20	--	.49	249	1.36
Schistocerca lineata	--	--	.05	.03	--	.67	--	--	--	--	13	.07
Spharagemon collare	1.01	.19	.36	.03	.70	1.61	1.26	.30	1.93	.65	120	.65
Spharagemon equale	.07	.72	.12	.56	.06	1.14	.11	.10	.48	--	58	.32
Stethophyma gracilis Scudd.	--	--	.24	.14	--	--	--	--	--	--	14	.08
Trachyrhachis kiowa	--	--	--	.03	--	--	--	--	--	--	1	.005
T. kiowa kiowa	.04	--	.29	2.56	--	.07	.11	.10	--	.08	173	.94
Trinerotropis campestris McN.	--	--	--	.17	--	.07	--	--	--	--	6	.03
T. laticincta	--	--	--	--	--	.07	--	--	--	--	1	.005
T. pallidipennis salina McN.	--	--	.19	.14	--	--	--	--	--	--	12	.06

NORTH DAKOTA (Continued)

Species	Small grain (east)	Small grain (west)	Native grass (east)	Native grass (west)	Alfalfa sweet-clover	Idle land	Sorghum	Flax	Corn	Millet	Total specimens	Percentage of grand total
T. pistrinaria	--	--	--	0.14	--	--	--	--	--	--	Number 4	0.02
Undetermined Melanoplus	--	--	--	--	--	0.07	--	--	--	--	1	.005
Undetermined Trimerotropis	--	--	0.05	--	--	--	--	--	--	--	2	.01
Undetermined	0.04	--	.05	--	0.06	.07	--	--	0.12	--	6	.03
Crickets	--	--	.24	--	--	--	--	--	--	--	10	.05
Nymphs	--	--	1.30	--	--	--	--	1.82	--	--	72	.39
Total specimens per environment	2,662	1,532	4,148	2,856	1,707	1,494	872	990	830	1,222	15,313	--

NORTH DAKOTA

The percentages of individuals of the various species present in North Dakota, arranged according to crops infested, are summarized as follows:

<u>Small grain (eastern)</u>		<u>Percent</u>	<u>Small grain (western)</u>		<u>Percent</u>
1. <i>Melanoplus mexicanus</i> -----	60		1. <i>Melanoplus mexicanus</i> -----	71	
2. <i>M. femur-rubrum</i> -----	9		2. <i>M. bivittatus</i> -----	5	
3. <i>M. bivittatus</i> -----	8		3. <i>M. differentialis</i> -----	4	
4. <i>M. packardii</i> -----	7		4. <i>Ageneotettix deorum</i> -----	4	
5. <i>Ageneotettix deorum</i> -----	5		5. <i>M. packardii</i> -----	4	
6. 21 other spp. and undet.-----	11		6. 17 other species-----	12	
<u>Native grassland (eastern)</u>			<u>Native grassland (western)</u>		
1. <i>Ageneotettix deorum</i> -----	24		1. <i>Ageneotettix deorum</i> -----	23	
2. <i>Melanoplus mexicanus</i> -----	18		2. <i>Amphitornus coloradus</i> -----	12	
3. <i>M. dawsoni</i> -----	6		3. <i>Phlibostroma quadrimaculatum</i>	12	
4. <i>M. infantilis</i> -----	5		4. <i>M. mexicanus</i> -----	8	
5. <i>M. gladstoni</i> -----	5		5. <i>Camnula pellucida</i> -----	7	
6. 39 other spp., undet., crickets, and nymphs-----	42		6. 51 other species-----	38	
<u>Alfalfa and sweetclover</u>			<u>Idle land</u>		
1. <i>Melanoplus mexicanus</i> -----	35		1. <i>Melanoplus mexicanus</i> -----	45	
2. <i>M. femur-rubrum</i> -----	20		2. <i>M. packardii</i> -----	14	
3. <i>M. bivittatus</i> -----	16		3. <i>M. femur-rubrum</i> -----	11	
4. <i>Ageneotettix deorum</i> -----	12		4. <i>Ageneotettix deorum</i> -----	9	
5. <i>M. packardii</i> -----	7		5. <i>M. bivittatus</i> -----	8	
6. 20 other spp., and undet.-----	10		6. 26 other spp. and undet.-----	13	
<u>Sorghum</u>			<u>Flax</u>		
1. <i>Melanoplus mexicanus</i> -----	37		1. <i>Melanoplus mexicanus</i> -----	58	
2. <i>M. bivittatus</i> -----	17		2. <i>M. femur-rubrum</i> -----	15	
3. <i>M. packardii</i> -----	11		3. <i>M. bivittatus</i> -----	10	
4. <i>M. femur-rubrum</i> -----	11		4. <i>M. packardii</i> -----	6	
5. <i>Dissosteira carolina</i> -----	8		5. <i>Dissosteira carolina</i> -----	2	
6. 13 other species-----	16		6. 12 other spp. and nymphs----	9	
<u>Corn</u>			<u>Millet</u>		
1. <i>Melanoplus mexicanus</i> -----	38		1. <i>Melanoplus mexicanus</i> -----	56	
2. <i>M. bivittatus</i> -----	28		2. <i>M. bivittatus</i> -----	14	
3. <i>M. packardii</i> -----	8		3. <i>M. femur-rubrum</i> -----	7	
4. <i>M. femur-rubrum</i> -----	7		4. <i>M. packardii</i> -----	7	
5. <i>Camnula pellucida</i> -----	4		5. <i>M. differentialis</i> -----	5	
6. <i>Dissosteira carolina</i> -----	4		6. 14 other species-----	11	
7. 11 other spp. and undet.-----	11				
<u>Grand total</u>		<u>Percent</u>			
1. <i>Melanoplus mexicanus</i> -----	37				
2. <i>Ageneotettix deorum</i> -----	12				
3. <i>M. bivittatus</i> -----	7				
4. <i>M. femur-rubrum</i> -----	7				
5. <i>M. packardii</i> -----	5				
6. 62 other spp., undet., crickets, and nymphs -----	32				

OKLAHOMA

This is the third year in which collections have been made in Oklahoma during the adult survey, and 2,059 specimens were taken in 8 major habitats -- less than half the number collected in 1938. The reason for this is the fact that populations have fallen off to almost zero in many places. There were 45 species in the collections. Melanoplus differentialis was the dominant species in 5 out of the 8 environments and for the State as a whole. Aeoloplus turnbullii bruneri and M. packardii were dominant in small grain, with M. differentialis a close third. M. mexicanus has not been an important grasshopper in Oklahoma and is still far from being as important here as elsewhere.

All but the Panhandle portion of the State has little or no infestation. Texas and Cimarron Counties are by far the only two counties with severe infestations, where large areas of idle land, grain, and sorghum stubble have infestations.

Distribution by species of 2,059 specimens collected in Oklahoma, expressed in percentage of total number collected in each habitat

Species	Wood-land	Sav- gum	Field margin	Bottom land	Idle land	Range land	Al- falga	Small grain	Total speci- mens	Percentage of grand total
<i>Acidophilus turnbullii</i> bruneri	--	--	17.66	2.19	3.66	0.21	6.67	21.43	208	10.10
<i>Ageneotettix deorum</i>	6.85	--	3.98	1.46	1.22	17.27	1.57	2.22	126	6.22
<i>Arphia simplex</i> Scudd.	--	--	--	.73	--	--	--	--	1	.05
<i>Aulocara ellioti</i>	--	1.96	1.59	1.46	.81	1.92	--	2.22	32	1.55
<i>Boopodon nubilun</i>	--	--	--	--	--	--	--	.37	1	.05
<i>Brachystola magna</i>	--	--	.66	--	.41	.64	--	.37	10	.43
<i>Campylocantha o. olivacea</i>	--	--	--	--	.41	--	--	--	1	.05
<i>Chortophaga viridifasciata</i>	2.74	--	.40	3.65	.41	1.23	1.67	--	15	.87
<i>Dissosteira longipennis</i>	20.55	--	.53	6.57	--	5.97	--	3.33	65	3.16
<i>Encyrtolophus subgracilis texensis</i> Burma.	--	--	.13	--	--	--	--	--	1	.05
<i>Encyrtolophus sordidus costalis</i>	--	--	--	--	--	.43	--	--	2	.10
<i>Hadrotettix trifasciatus</i>	--	--	.53	--	--	3.62	--	1.11	24	1.16
<i>Hesperotettix speciosus</i>	5.43	--	2.12	2.19	17.07	1.49	--	1.46	76	3.69
<i>Hesperotettix viridis viridis</i>	--	--	--	2.92	.81	3.54	--	.37	25	1.21
<i>Hippiscus rugosus</i>	1.37	--	1.19	3.65	.41	2.77	--	--	29	1.41
<i>Melanoplus angustipennis impiger</i> Scudd.	10.96	--	2.12	3.19	15.55	5.97	1.67	.37	96	4.66
<i>M. arizonae</i> Scudd.	--	--	.66	--	--	.85	--	1.85	14	.63
<i>M. bispinosus</i> Scudd.	--	--	.26	--	.51	.64	--	--	7	.34
<i>M. bivittatus</i>	--	--	5.44	16.79	8.94	4.05	20.00	2.22	123	5.97
<i>M. differentialis</i>	--	41.15	17.93	27.01	23.17	1.49	33.33	20.37	335	16.27
<i>M. femur-rubrum</i>	--	--	--	--	--	--	1.67	--	1	.05
<i>M. flavidus</i>	--	5.83	.13	--	2.44	.21	--	.37	12	.58
<i>M. foedus foedus</i>	--	1.96	1.06	.73	6.10	1.49	3.33	.37	35	1.70
<i>M. foedus iselyi</i> Hebard	--	3.92	2.39	2.92	2.44	1.26	1.67	.74	39	1.89
<i>M. glaucipes</i> Scudd.	--	--	.13	.73	.41	--	5.00	--	6	.29
<i>M. lakinus</i>	--	1.96	.93	--	.81	.64	1.67	.37	15	.73
<i>M. mexicanus</i>	--	17.65	13.94	.73	2.03	1.07	5.00	13.33	164	7.96
<i>M. packardii</i>	--	7.84	10.09	8.76	6.10	10.87	10.00	21.11	221	10.73

OKLAHOMA (Continued)

Species	Wood- land	Sor- ghum	Field margin	Bottom land	Idle land	Range land	Al- falga	Small grain	Total speci- mens	Per- centage of grand total
									Number	
Melanoplus ponderosus Scudd.	--	--	0.13	1.46	1.63	--	--	--	7	0.34
M. regalis	--	--	--	--	--	0.21	--	--	1	0.05
Mermiria maculipennis	1.37	1.96	1.46	1.46	.41	4.90	--	1.48	43	2.09
Mermiria neomexicana	--	--	--	--	.41	.21	--	--	2	0.10
Opeia obscura	--	--	.66	1.46	.41	3.20	--	--	23	1.12
Orphulella speciosa	--	--	.40	--	--	.85	--	--	7	.34
Pardalophora saussueri Scudd.	9.59	--	.53	--	--	.43	--	--	13	.63
Phibostroma quadrimaculatum	--	--	.93	2.92	--	.85	--	--	15	.73
Schistocerca a. americana	--	--	.13	1.46	--	--	--	--	3	.14
S. lineata	2.74	--	--	.73	--	.43	--	--	5	.24
Spharagemon collare	34.25	1.96	2.12	--	1.22	2.13	1.67	--	56	2.72
Spharagemon equale	--	1.96	.53	--	--	1.92	--	1.85	19	.92
Syrbula admirabilis	1.37	--	1.59	2.19	1.22	11.30	--	.37	73	3.54
Trachyrhachis kiowa fuscifrons	1.37	--	.80	--	--	5.33	--	--	32	1.55
T. kiowa kiowa	--	--	.26	--	--	--	--	--	2	.10
Trimerotropis p. pallidipennis	--	5.88	.53	--	--	--	--	.37	8	.39
T. citrina Scudd.	--	1.96	--	3.65	--	--	--	--	6	.29
Undetermined	1.37	1.96	1.06	--	.41	--	--	.37	12	.58
Nymphs	--	1.96	4.91	--	--	.21	--	1.48	43	2.09
Total specimens per environment	73	51	753	137	246	469	60	270	2059	--

OKLAHOMA

The percentages of individuals of the various species present in Oklahoma, arranged according to crops infested, are summarized as follows:

<u>Woodland</u>		<u>Percent</u>	<u>Sorghum</u>		<u>Percent</u>
1.	<i>Spharagemon collare</i> -----	34	1.	<i>Melanoplus differentialis</i> ---	41
2.	<i>Dissosteira longipennis</i> -----	21	2.	<i>M. mexicanus</i> -----	18
3.	<i>M. angustipennis impiger</i> -----	11	3.	<i>M. packardii</i> -----	8
4.	<i>Pardalophora sausseri</i> -----	10	4.	<i>M. flavidus</i> -----	6
5.	<i>Ageneotettix deorum</i> -----	7	5.	<i>Trimerotropis p. pallidipennis</i>	6
6.	7 other spp., and undet.--	17	6.	8 other spp., undet., and nymphs-----	21
<u>Field margin</u>			<u>Bottom land</u>		
1.	<i>Melanoplus differentialis</i> -----	18	1.	<i>Melanoplus differentialis</i> ---	27
2.	<i>Aeoloplus turnbullii bruneri</i> --	18	2.	<i>M. bivittatus</i> -----	17
3.	<i>M. mexicanus</i> -----	14	3.	<i>M. packardii</i> -----	9
4.	<i>M. packardii</i> -----	10	4.	<i>Dissosteira longipennis</i> -----	7
5.	<i>M. bivittatus</i> -----	5	5.	<i>Chortophaga viridifasciata</i> --	4
6.	30 other spp., undet., and nymphs-----	35	6.	<i>Hippiscus rugosus</i> -----	4
			7.	<i>Trimerotropis citrina</i> Scudd.	4
			8.	18 other species--	28
<u>Idle land</u>			<u>Range land</u>		
1.	<i>Melanoplus differentialis</i> -----	23	1.	<i>Ageneotettix deorum</i> -----	17
2.	<i>Hesperotettix speciosus</i> -----	17	2.	<i>Syrbula admirabilis</i> -----	11
3.	<i>M. angustipennis impiger</i> -----	16	3.	<i>M. packardii</i> -----	11
4.	<i>M. bivittatus</i> -----	9	4.	<i>Dissosteira longipennis</i> -----	6
5.	<i>M. foedus foedus</i> -----	6	5.	<i>M. angustipennis impiger</i> ----	6
6.	<i>M. packardii</i> -----	6	6.	29 other spp., and nymphs---	49
7.	20 other spp., and undet.--	23			
<u>Alfalfa</u>			<u>Small grain</u>		
1.	<i>Melanoplus differentialis</i> -----	38	1.	<i>Aeoloplus turnbullii bruneri</i>	21
2.	<i>M. bivittatus</i> -----	20	2.	<i>Melanoplus packardii</i> -----	21
3.	<i>M. packardii</i> -----	10	3.	<i>M. differentialis</i> -----	20
4.	<i>Aeoloplus turnbullii bruneri</i> --	7	4.	<i>M. mexicanus</i> -----	13
5.	<i>M. glaucipes</i> Scudd.-----	5	5.	<i>Chortophaga viridifasciata</i> --	3
6.	<i>M. mexicanus</i> -----	5	6.	18 other spp., undet., and nymphs-----	22
7.	8 other species-----	15			
<u>Grand total</u>			<u>Percent</u>		
	1. <i>Melanoplus differentialis</i> ---	16			
	2. <i>M. packardii</i> -----	11			
	3. <i>Aeoloplus turnbullii bruneri</i>	10			
	4. <i>M. mexicanus</i> -----	8			
	5. <i>Ageneotettix deorum</i> -----	6			
	6. <i>M. bivittatus</i> -----	6			
	7. 39 other spp., undet., nymphs	43			

OREGON

This is the second year that collections have been made in Oregon during the adult survey, and 741 specimens were collected in 6 typical environments. Some of the collections were too small to furnish reliable information on the relative abundance of species. For the State as a whole, Melanoplus mexicanus was the dominant species, with Camnula pellucida second, and M. femur-rubrum a close third in the numbers collected. Infestations are very localized, consisting of spotted areas in the northeastern five counties. In Harney, Lake, Grant, and Klamath Counties there is a total of 15,000 acres of C. pellucida egg beds.

Distribution by species of 741 specimens collected in Oregon, expressed in percentage of total number collected in each habitat

Species	Range	Ditch bank	Alfalfa (legumes)	Small grain	Wild-hay meadow	Marsh-land	Total specimens	Percentage of grand total
							Number	
<i>Ageneotettix deorum</i>	1.05	--	--	--	--	--	1	0.13
<i>Amphitornus coloradus</i>	3.16	--	--	--	--	--	3	.40
<i>Arphia p. pseudonietana</i>	7.37	--	0.46	--	0.46	--	9	1.21
<i>Aulocara ellioti</i>	1.05	--	--	--	--	--	1	.13
<i>Camula pellucida</i>	13.68	37.50	--	9.26	51.16	20.19	170	22.94
<i>Circotettix undulatus</i>	2.10	--	--	--	--	--	2	.27
<i>Chortippus longicornis</i>	--	--	1.38	--	6.05	3.85	20	2.70
<i>Conozoa wallula</i>	--	--	.46	5.55	--	1.92	6	.81
<i>Cratypedes neglectus</i> Thos.	2.10	--	--	3.70	--	--	4	.54
<i>Dissosteira carolina</i>	--	--	1.38	27.78	--	--	18	2.43
<i>Dissosteira spurcata</i> Sauss.	3.16	--	--	--	--	--	3	.40
<i>Melanoplus bivittatus</i>	2.10	3.57	18.43	5.55	--	1.92	49	6.61
<i>M. femur-rubrum</i>	2.10	57.14	30.87	3.70	16.74	23.08	163	22.00
<i>M. foedus foedus</i>	--	--	4.61	5.55	--	--	13	1.75
<i>M. mexicanus</i>	51.58	1.78	26.11	36.89	23.25	46.15	230	31.04
<i>Oedaleonatus enigma</i>	1.05	--	--	--	.46	--	2	.27
<i>Phoctaliotes nebrascensis</i>	--	--	5.99	--	--	--	13	1.75
<i>Spharagenon equale</i>	5.26	--	.46	--	--	--	6	.81
<i>Trinerotropis p. pallidipennis</i>	--	--	5.53	--	--	.96	13	1.75
<i>Trinerotropis suffusus</i>	--	--	--	--	.46	--	1	.13
<i>Nymphs</i>	4.21	--	2.30	--	1.39	1.92	14	1.89
Total specimens per environment	95	56	217	54	215	104	741	--

OREGON

The percentages of individuals of the various species present in Oregon, arranged according to crops infested, are summarized as follows:

<u>Range</u>	<u>Percent</u>	<u>Ditch bank</u>	<u>Percent</u>
1. <i>Melanoplus mexicanus</i> -----	52	1. <i>Melanoplus femur-rubrum</i> -----	57
2. <i>Camnula pellucida</i> -----	14	2. <i>Camnula pellucida</i> -----	37
3. <i>Arphia p. pseudonietana</i> -----	7	3. <i>M. bivittatus</i> -----	4
4. <i>Spharagemon equale</i> -----	5	4. <i>M. mexicanus</i> -----	2
5. <i>Amphitornus coloradus</i> -----	3		
6. <i>Dissosteira spurcata</i> -----	3		
7. 6 other species and nymphs---	16		

Alfalfa (legumes)

1. <i>Melanoplus femur-rubrum</i> -----	31
2. <i>M. mexicanus</i> -----	28
3. <i>M. bivittatus</i> -----	18
4. <i>Phoetaliotes nebrascensis</i> ----	6
5. <i>Trimerotropis p. pallidipennis</i>	5
6. <i>M. foedus foedus</i> -----	5
7. 5 other species and nymphs---	7

Small grain

1. <i>Melanoplus mexicanus</i> -----	39
2. <i>Dissosteira carolina</i> -----	28
3. <i>Camnula pellucida</i> -----	9
4. <i>Conozoa wallula</i> -----	5
5. <i>M. bivittatus</i> -----	5
6. <i>M. foedus foedus</i> -----	5
7. 2 other species-----	9

Wild-hay meadow

1. <i>Camnula pellucida</i> -----	51
2. <i>Melanoplus mexicanus</i> -----	23
3. <i>M. femur-rubrum</i> -----	17
4. <i>Chortippus longicornis</i> -----	6
5. 3 other species and nymphs---	3

Marshland

1. <i>Melanoplus mexicanus</i> -----	46
2. <i>M. femur-rubrum</i> -----	23
3. <i>Camnula pellucida</i> -----	20
4. <i>Chortippus longicornis</i> -----	4
5. <i>Conozoa wallula</i> -----	2
6. <i>M. bivittatus</i> -----	2
7. 1 other species and nymphs---	3

Grand total

Percent

1. <i>Melanoplus mexicanus</i> -----	31
2. <i>Camnula pellucida</i> -----	23
3. <i>M. femur-rubrum</i> -----	22
4. <i>M. bivittatus</i> -----	7
5. <i>Chortippus longicornis</i> -----	3
6. 15 other species and nymphs--	14

SOUTH DAKOTA

This is the sixth year in which collections have been made in South Dakota. A total of 12,042 specimens were taken in 10 habitats, with 65 species included in the collections. Melanoplus mexicanus was the dominant species in 5 out of the 10 habitats and in the total number of specimens collected in the State. Ageneotettix deorum was second in numbers, being the most numerous of all specimens taken in 3 out of the 10 environments. Collections were made too late to get representative numbers of M. bivittatus and it may have been equal in numbers to M. differentialis, which was third in relative abundance. M. mexicanus has decreased in relative abundance and Ageneotettix deorum has greatly increased. The heaviest infestations are in the eastern and south-central parts of the State. Flights out of the Black Hills section, in the western part of the State, greatly reduced populations there.

SOUTH DAKOTA

Distribution by species of 12,042 specimens collected in South Dakota, expressed in percentage of total number collected in each habitat

Species	Field mar- gin	Small grain	Le- gumes	Corn	Sor- ghum	Idle land	Open range	Native hay	River breaks	Bot- tom land	Total spec- imens	Per- centage of grand total
<i>Aeoloplus turnbullii bruneri</i>	--	--	--	--	--	0.21	--	--	--	0.31	6	0.05
<i>Aeoloplus turnbullii</i>	4.89	2.95	1.40	0.40	0.17	1.45	--	0.17	0.94	1.57	212	1.76
<i>Aeropedellus clavatus</i>	--	--	--	--	--	--	--	--	--	.08	1	.01
<i>Agneotettix deorum</i>	9.68	6.32	3.63	3.64	.17	3.52	44.30	34.74	18.49	23.41	2171	18.02
<i>Amphitornus coloradus</i>	.21	--	--	--	--	1.55	4.23	3.54	2.19	2.20	193	1.60
<i>Arphia p. pseudonietana</i>	--	--	--	--	--	--	.14	1.21	--	.24	20	.17
<i>Aulocara elliotti</i>	3.19	7.13	.14	5.47	.33	1.76	4.37	12.71	2.19	5.03	578	4.80
<i>Boopedon nubilum</i>	.05	.24	--	1.82	--	--	--	1.12	1.10	.08	36	.30
<i>Brachystola magna</i>	--	.05	--	--	.17	--	--	--	.94	.08	8	.07
<i>Camula pellucida</i>	--	--	--	--	--	--	--	.35	--	1.26	21	.17
<i>Chortippus longicornis</i>	--	--	--	--	--	--	--	.43	.16	.16	8	.07
<i>Circotettix rabula nigra</i>	--	--	--	--	--	--	--	--	--	--	--	--
<i>fasciatus Beamer</i>	--	--	--	--	--	--	--	--	.78	--	5	.04
<i>Cordillacris cremulata</i>	--	--	--	--	--	--	.28	--	--	--	6	.05
<i>C. occipitalis cinerea</i>	--	--	--	--	--	--	--	--	.31	--	2	.02
<i>C. o. occipitalis</i>	--	--	--	.20	--	--	.28	.35	--	--	11	.09
<i>Dactyloctenium pictum</i>	--	--	--	--	--	--	.09	--	1.41	--	11	.09
<i>Derotmena haydenii</i>	1.85	.62	--	1.01	.17	.10	.28	--	--	1.02	75	.62
<i>Dissosteira carolina</i>	.82	.90	--	3.04	3.82	.31	--	.26	.16	1.57	100	.83
<i>Drepanopterna femoratum</i>	.15	--	--	.20	--	--	1.07	.43	--	.31	36	.30
<i>Encoptolophus sordidus costalis</i>	--	--	--	--	--	.10	.19	1.64	--	.39	29	.24
<i>Hadrotettix trifasciatus</i>	.41	.28	--	.20	.33	.10	.60	.43	1.57	.71	55	.46
<i>Hesperotettix speciosus</i>	.10	--	.28	--	--	--	.14	--	1.10	.78	24	.20
<i>H. viridis pratensis</i>	1.44	.33	--	--	.17	.21	.05	--	1.41	.55	55	.46
<i>H. viridis viridis</i>	--	--	--	.40	--	--	--	--	--	--	2	.02
<i>Hippiscus rugosus</i>	--	--	--	--	--	--	.42	.35	2.66	.16	32	.26
<i>Hypochlora alba</i>	--	--	--	--	--	--	.09	.35	.47	.86	20	.17

Species	Field margin	Small grain-groves	Leaves	Corn	Sorghum	Idle land	Open range	Native hay	River breaks	Bottom land	Total specimens	Percentage of grand total
Melanoplus angustipennis	2.99	2.61	2.09	3.24	1.33	0.21	0.14	0.86	0.94	2.04	199	1.65
M. bivittatus	8.09	2.61	8.52	18.02	15.95	2.07	---	1.38	3.29	9.82	640	5.31
M. bowditchi Scudd.	---	.71	---	---	---	---	---	---	---	---	15	.12
M. bowditchi canus	---	---	---	---	---	---	---	---	6.74	---	43	.36
M. confusus	---	---	---	---	---	---	---	---	.16	---	1	.01
M. dawsoni	---	---	---	---	---	---	.05	.69	1.10	.16	18	.15
M. differentialis	14.01	10.07	11.87	30.57	42.52	5.70	.19	.43	2.98	8.17	1163	9.65
M. fasciatus	---	---	---	---	---	---	---	---	1.10	---	7	.06
M. femur-rubrum	4.17	5.08	19.69	3.04	2.66	1.76	.88	1.99	.16	2.98	458	3.80
M. flavidus	.10	.05	---	---	---	---	---	---	---	---	3	.02
M. f. flavidus	---	---	---	.61	---	---	---	---	---	---	3	.02
M. foedus fluvialis	---	---	---	---	---	---	---	---	---	1.49	19	.16
M. foedus foedus	---	---	---	---	---	.10	---	---	---	---	1	.01
M. gladstoni	.21	.33	9.08	---	---	.52	2.05	.69	.63	.08	138	1.14
M. infantilis	---	---	---	---	---	.10	.37	.17	.63	.08	16	.13
M. keeleri luridus	---	---	---	---	---	---	---	---	.47	---	3	.02
M. lakinus	1.49	1.05	0.14	.20	.17	.21	---	---	---	.24	59	.49
M. mexicanus	32.55	46.47	35.06	15.59	19.10	66.01	6.04	16.68	24.92	16.18	3378	28.04
M. occidentalis	---	---	---	---	---	---	.14	---	.78	---	8	.07
M. packardii	8.50	6.18	4.75	6.07	8.64	10.67	.42	.60	5.01	2.51	594	4.93
M. scudderii	---	.47	---	.40	---	---	---	---	---	---	2	.02
Merniria maculipennis naccelungi	.21	---	---	.40	---	---	1.02	3.20	3.45	6.05	174	1.44
Merniria neomexicana	---	---	---	---	---	---	---	---	.16	---	1	.01
Metator pardalinus	.21	---	---	.20	---	.21	.14	.60	---	.47	23	.19
Opeia obscura	.10	---	---	.20	---	---	4.56	.26	---	.23	107	.89
Orphulella p. pelidna	---	.05	---	---	---	---	.05	.17	---	.08	5	.04
Orphulella speciosa	.05	---	---	---	---	---	.28	3.63	2.82	.78	77	.64
Pardalophora haldemani	---	---	---	---	---	---	---	---	.16	---	1	.01
Phliostrota quadrimaculata	.21	---	---	---	---	---	20.46	1.56	2.82	.71	489	4.06
Phoetaliotes nebrascensis	1.29	.28	.98	---	.33	.42	1.26	6.83	1.25	3.22	199	1.65
Schistocerca lineata	---	---	---	---	---	---	---	---	.16	.08	2	.02
Spharagemon bolli Scudd.	---	---	---	---	---	---	---	---	.47	.31	7	.06

SOUTH DAKOTA (Continued)

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Species	Field margin	Small grain	Le-gumes	Corn	Sorghum	Idle-land	Open range	Native hay	River breaks	Bottom land	Total specimens	Percent- age of grand total
	0.67	0.76	0.42	3.24	1.33	0.21	--	0.86	0.31	0.24	73	0.61
Spharagenon collare	.88	1.43	.28	1.82	2.49	1.87	0.74	.86	1.10	2.28	153	1.27
Spharagenon equale	--	--	--	--	--	.31	3.91	.26	1.10	.39	102	.85
Trachyrhachis k. kiowa	--	--	--	--	--	--	--	--	.78	--	5	.04
Trinerotropis cincta	--	--	--	--	--	--	--	--	--	.16	4	.03
T. laticincta	.05	.05	--	--	--	--	--	--	--	.08	1	.01
T. pallidipennis salina	--	--	--	--	--	--	--	--	--	.63	131	1.09
Nymphs	1.18	2.99	1.68	--	.17	.31	.79	.17	.31	--	3	.02
Undetermined	--	.05	--	--	--	--	--	--	--	--		
Total specimens per environment	1937	2106	716	494	602	965	2,151	1,157	638	1,276	12,042	--

SOUTH DAKOTA

The percentages of individuals of the various species present in South Dakota, arranged according to the different habitats, are summarized as follows:

<u>Field margin</u>	<u>Percent</u>	<u>Small grain</u>	<u>Percent</u>
Melanoplus mexicanus-----	33	1. Melanoplus mexicanus-----	46
Melanoplus differentialis-----	14	2. Melanoplus differentialis-----	10
Ageneotettix deorum-----	10	3. Aulocara ellioti-----	7
Melanoplus packardii-----	8	4. Ageneotettix deorum-----	6
Melanoplus bivittatus-----	8	5. Melanoplus packardii-----	6
24 other species-----	26	6. 21 other species-----	22
Nymphs-----	1	7. Nymphs-----	3
<u>Alfalfa and sweetclover</u>		<u>Corn</u>	
Melanoplus mexicanus-----	35	1. Melanoplus differentialis-----	31
Melanoplus femur-rubrum-----	20	2. Melanoplus bivittatus-----	18
Melanoplus differentialis-----	12	3. Melanoplus mexicanus-----	16
Melanoplus gladstoni-----	9	4. Melanoplus packardii-----	6
Melanoplus bivittatus-----	8	5. Aulocara ellioti-----	5
10 other species-----	14	6. 19 other species-----	24
Nymphs-----	2		
<u>Sorghum</u>		<u>Restoration land</u>	
Melanoplus differentialis-----	42	1. Melanoplus mexicanus-----	66
Melanoplus mexicanus-----	19	2. Melanoplus packardii-----	11
Melanoplus bivittatus-----	16	3. Melanoplus differentialis-----	6
Melanoplus packardii-----	9	4. Ageneotettix deorum-----	3
Dissosteira carolina-----	4	5. Melanoplus bivittatus-----	2
13 other species-----	10	6. 20 other species-----	12
<u>Plains grassland</u>		<u>Native hay land</u>	
Ageneotettix deorum-----	44	1. Ageneotettix deorum-----	35
Phlibostroma quadrimaculatum--	20	2. Melanoplus mexicanus-----	17
Melanoplus mexicanus-----	6	3. Aulocara ellioti-----	13
Opeia obscura-----	5	4. Phoetaliotes nebracensis-----	7
Aulocara ellioti-----	4	5. Orphulella speciosa-----	4
28 other species-----	20	6. 30 other species-----	24
Nymphs-----	1		
<u>River breaks</u>		<u>Bottom land</u>	
Melanoplus mexicanus-----	25	1. Ageneotettix deorum-----	23
Ageneotettix deorum-----	18	2. Melanoplus mexicanus-----	16
Melanoplus bowditchi canus----	7	3. Melanoplus bivittatus-----	10
Melanoplus packardii-----	5	4. Melanoplus differentialis-----	8
Mermiria m. macclungi-----	3	5. Mermiria m. macclungi-----	6
39 other species-----	42	6. 17 other species-----	36
		7. Nymphs-----	1

SOUTH DAKOTA
(Continued)

	<u>Grand total</u>	<u>Percent</u>
1. <i>Melanoplus mexicanus</i> -----	28	
2. <i>Ageneotettix deorum</i> -----	18	
3. <i>Melanoplus differentialis</i> -----	10	
4. <i>Melanoplus bivittatus</i> -----	5	
5. <i>Melanoplus packardii</i> -----	5	
6. 60 other species-----	33	
7. Nymphs-----	1	

TEXAS

This is the third year in which collections have been made in Texas during the adult survey. A total of 732 specimens were collected in 3 environments and 24 species were represented. So far as adults were concerned, M. differentialis was the dominant grasshopper in the collections for the whole State. M. mexicanus, however, was the dominant species in 2 out of the 3 environments, although the number of specimens collected in small grain was too small to draw any accurate conclusion as to the relative abundance of the different species. There were many nymphs in the collections and these were most likely M. mexicanus, because the second generation of this species was just in the nymphal stage at the time the collections were made. M. mexicanus has increased in its relative abundance over 1938.

In areas where a second generation of M. mexicanus occurs, the problem of control becomes complicated. Some observations where such phenomena occur have shown that satisfactory baiting has been done for the first generation, but the fecundity of the females left often produced a second infestation equal to or greater than the first.

In the north-central part of the State, infestations of M. mexicanus are extremely localized in river and creek-bottom land. The worst infestations are in the Northwestern Panhandle counties, but even here the situation is not serious.

TEXAS

Distribution by species of 732 specimens collected in Texas, expressed in percentage of total number collected in each habitat

Species	Small grain	Roadside	Sorghums	Total specimens	Percentage of grand total
Aeoloplus turnbullii bruneri	---	4.42	---	Number 24	3.28
Aulocara elliotti	---	.55	---	3	.41
Boopedon nubilun	2.94	.92	---	6	.82
Campylacantha olivacea vivax Scudd.	---	1.10	---	6	.82
Dissosteira longipennis	2.94	.55	2.58	8	1.09
Hesperotettix speciosus	---	1.10	---	6	.82
Hesperotettix viridis viridis	---	1.47	---	8	1.09
Melanoplus angustipennis impiger	---	.37	---	2	.27
M. arizonae	---	1.66	---	9	1.23
M. bivittatus	---	1.29	.64	8	1.09
M. differentialis	23.53	13.26	41.93	145	19.81
M. femur-rubrum	---	1.29	---	7	.96
M. foedus foedus	5.88	1.29	1.29	11	1.50
M. lakinus	2.94	9.76	3.22	59	8.06
M. mexicanus	47.06	15.10	8.39	111	15.16
M. occidentalis	---	.18	---	1	.14
M. packardii	11.76	8.65	5.81	60	8.20
M. regalis	---	.18	---	1	.14
Mermiria maculipennis Rehn	---	.55	---	3	.41
Opeia obscura	---	.18	---	1	.14
Phlibostroma quadrimaculatum	---	.18	---	1	.14
Schistocerca lineata	---	---	.64	1	.14
Spharagemon collare	---	.18	.64	2	.27
Tropidolophus formosus	---	.37	---	2	.27
Undetermined	---	.37	.64	3	.41
Nymphs	2.94	34.99	34.19	244	33.33
Total specimens per environment	34	543	155	732	---

TEXAS

The percentages of individuals of the various species present in Texas, arranged according to crops infested, are summarized as follows:

<u>Small grain</u>		<u>Roadside</u>	
	<u>Percent</u>		<u>Percent</u>
Melanoplus mexicanus-----	47	1. Melanoplus mexicanus-----	15
M. differentialis-----	23	2. M. differentialis-----	13
M. packardii-----	12	3. M. lakinus-----	10
M. foedus foedus-----	6	4. M. packardii-----	9
Boopedon nubilum-----	3	5. Aeoloplus turnbullii bruneri	4
Dissosteira longipennis-----	3	6. 18 other spp., undet., and	
M. lakinus-----	3	nymphs-----	49
Nymphs-----	3		
<u>Sorghums</u>		<u>Grand total</u>	
Melanoplus differentialis-----	42	1. Melanoplus differentialis---	20
M. mexicanus-----	8	2. M. mexicanus-----	15
M. packardii-----	6	3. M. lakinus-----	8
M. lakinus-----	3	4. M. packardii-----	8
Dissosteira longipennis-----	3	5. Aeoloplus turnbullii bruneri	3
4 other spp., undet., and		6. 19 other spp., undet., and	
nymphs-----	38	nymphs-----	46

UTAH

This is the fifth consecutive year in which collections of grasshoppers have been made in typical environments during the adult survey, and 9,176 specimens were collected in 7 environments, 35 species being represented in these collections. Melanoplus mexicanus was the dominant species in the major habitats, with M. femur-rubrum ranking second in importance, M. packardii third, Camnula pellucida fourth, and M. bivittatus fifth. These species occurred in about the same order in 1938.

Distribution by species of 9,176 specimens collected in various habitats of Utah,
expressed in percentages of total numbers collected in each habitat

Species	Alfalfa	Small grain	Grass land	Needs	Orchard	Truck crops	High mountain	Total specimens	Percentage of grand total
								Number	
<i>Aeoloplus tenuipennis</i> Scudd.	0.01	--	2.35	--	--	--	--	17	0.18
<i>Ageneotettix deorum</i> ---	.14	0.05	--	--	--	0.80	--	11	.12
<i>Arphia pseudonietana</i> ---	.26	.32	.58	--	--	--	--	26	.24
<i>Amphitornus coloradus</i> ---	--	--	.29	--	0.61	--	--	3	.03
<i>Aulocara elliotti</i> ---	.54	.38	1.32	--	.61	--	--	51	.55
<i>Drepanopterna femoratum</i> ---	.01	--	.73	--	--	--	--	6	.06
<i>Cannula pellucida</i> ---	4.51	5.02	10.73	--	--	--	5.26	449	4.89
<i>Chortippus longicornis</i> ---	.05	--	.44	--	--	--	--	6	.06
<i>Conozoa wallula</i> ---	.17	--	--	--	--	--	--	11	.12
<i>Dissosteira carolina</i> ---	.29	2.27	--	3.92	1.23	--	--	64	.70
<i>Dissosteira spurcata</i> ---	.11	.11	.44	--	--	--	--	12	.13
<i>Hesperotettix</i> sp.---	.05	.32	.73	--	--	3.20	--	18	.20
<i>Melanoplus bivittatus</i> ---	3.33	3.83	.29	--	4.29	2.40	--	291	3.17
<i>Melanoplus borealis monticola</i> ---	--	--	--	--	--	--	36.82	7	.08
<i>Melanoplus bruneri</i> ---	--	--	--	--	--	--	57.86	11	.12
<i>Melanoplus confusus</i> ---	.01	--	--	--	--	--	--	1	.01
<i>Melanoplus complanatus</i> Scudd.	--	.16	--	--	--	--	--	3	.03
<i>Melanoplus dawsoni</i> ---	.08	.05	.15	--	--	--	--	7	.08
<i>Melanoplus differentialis</i> ---	1.02	1.19	--	--	--	20.80	--	112	1.22
<i>Melanoplus femur-rubrum</i> ---	34.09	24.68	43.66	5.88	3.68	39.20	--	2943	32.08
<i>Melanoplus keeleri luridus</i> ---	1.50	.22	--	--	1.23	.80	--	101	1.10
<i>Melanoplus mexicanus</i> ---	40.38	46.06	16.32	50.96	61.30	25.60	--	3646	39.74
<i>Melanoplus packardii</i> ---	7.29	10.58	.88	5.88	26.36	1.60	--	706	7.69
<i>Mermiria maculipennis</i> ---	.03	.11	.15	--	--	--	--	5	.05
<i>Opeia obscura</i> ---	.03	.05	5.14	--	--	--	--	38	.41
<i>Oedaleonotus enigma</i> ---	.35	.16	--	--	--	--	--	25	.27
<i>Orphulella pelidna desereta</i> Scudd.	--	.16	3.53	--	--	--	--	27	.29

UTAH (Continued)

Species	Alfalfa	Small grain	Grass land	Weeds	Orchard	Truck crops	High mountain	Total specimens	Percentage of grand total
Phoetaliotes nebrascensis	0.06	0.16	--	--	--	--	--	7	0.08
Schistocerca shoshone (Thos.)	.01	--	--	--	--	4.00	--	6	.06
Spharagemon collaris	.03	.16	--	--	--	--	--	5	.05
Spharagemon equale	.06	--	--	--	--	--	--	4	.04
Trachyrhachis kiowa kiowa	.08	.49	5.73	31.36	--	--	--	69	.75
Trimerotropis latifasciata Scudd.	--	.05	2.64	--	--	--	--	19	.21
Trimerotropis p. pallidipennis	--	--	.15	--	--	--	--	1	.01
Trimerotropis sparsa Thos.	--	--	.29	--	--	--	--	2	.02
Nymphs and undetermined	5.84	4.10	3.09	1.96	0.61	1.60	--	466	5.08
Total specimens per environment	6275	1865	678	51	163	125	19	9176	--

UTAH

The percentages of individuals of the various species present in Utah, arranged according to crops or habitats infested, are summarized as follows:

<u>Alfalfa</u>		<u>Small grain</u>	
	<u>Percent</u>		<u>Percent</u>
1. <i>Melanoplus mexicanus</i> -----	40	1. <i>Melanoplus mexicanus</i> -----	46
2. <i>Melanoplus femur-rubrum</i> ----	34	2. <i>Melanoplus femur-rubrum</i> -----	25
3. <i>Melanoplus packardii</i> -----	7	3. <i>Melanoplus packardii</i> -----	11
4. <i>Camnula pellucida</i> -----	5	4. <i>Camnula pellucida</i> -----	5
5. <i>Melanoplus bivittatus</i> -----	3	5. <i>Melanoplus bivittatus</i> -----	4
6. 22 other species-----	5	6. 18 other species-----	5
7. Nymphs and undet.-----	6	7. Nymphs and undet.-----	4
<u>Grassland</u>		<u>Weeds</u>	
1. <i>Melanoplus femur-rubrum</i> -----	44	1. <i>Melanoplus mexicanus</i> -----	51
2. <i>Melanoplus mexicanus</i> -----	16	2. <i>Trachyrhachis k. kiowa</i> -----	31
3. <i>Camnula pellucida</i> -----	11	3. <i>Melanoplus femur-rubrum</i> -----	6
4. <i>Trachyrhachis k. kiowa</i> -----	6	4. <i>Melanoplus packardii</i> -----	6
5. <i>Opeia obscura</i> -----	5	5. <i>Dissosteira carolina</i> -----	4
6. 16 other species-----	15	6. Nymphs and undet.-----	2
7. Nymphs and undet.-----	3		
<u>Orchard</u>		<u>Truck crops</u>	
1. <i>Melanoplus mexicanus</i> -----	61	1. <i>Melanoplus femur-rubrum</i> -----	39
2. <i>Melanoplus packardii</i> -----	26	2. <i>Melanoplus mexicanus</i> -----	26
3. <i>Melanoplus bivittatus</i> -----	4	3. <i>Melanoplus differentialis</i> -----	21
4. <i>Melanoplus femur-rubrum</i> -----	4	4. <i>Schistocerca shoshone</i> -----	4
5. <i>Dissosteira carolina</i> -----	1	5. <i>Hesperotettix (sp.)</i> -----	3
6. 3 other species-----	3	6. 4 other species-----	5
7. Nymphs and undet.-----	1	7. Nymphs and undet.-----	2
<u>High mountain</u>		<u>Grand total</u>	
1. <i>Melanoplus bruneri</i> -----	58	1. <i>Melanoplus mexicanus</i> -----	40
2. <i>Melanoplus borealis mon-</i> <i>ticola</i> -----	37	2. <i>Melanoplus femur-rubrum</i> -----	32
3. <i>Camnula pellucida</i> -----	5	3. <i>Melanoplus packardii</i> -----	8
		4. <i>Camnula pellucida</i> -----	5
		5. <i>Melanoplus bivittatus</i> -----	3
		6. 30 other species-----	7
		7. Nymphs and undet.-----	5

WASHINGTON

This is the first year in which collections of grasshoppers in typical environments have been included in this project. Grasshoppers are not the problem in Washington that they are in other States. This may be due partly to climatic conditions and partly to the farming practices, which leave very little space for egg deposition of the common economic species. A total of 613 specimens were collected in the two major grasshopper habitats--alfalfa and native grasses. Melanoplus femur-rubrum was dominant in the alfalfa and Camnula pellucida in the native grass. Only 9 species are represented in the collections.

The grasshopper populations are at a very low ebb in the State, with infestations limited to alfalfa fields and undisturbed land within the intensively farmed areas. Clean summer fallow, with the land cultivated up to the road's edge, leaving little or no field margin, does not permit the development of infestations within grain stubble of M. mexicanus or other economic species.

WASHINGTON

Distribution by species of 613 specimens collected in Washington, expressed in percentage of total number collected in each habitat

Species	Alfalfa	Native grass	Total specimens	Percentage of grand total
Amphitornus coloradus	--	1.27	Number 4	0.78
Arphia p. pseudonietana	--	1.59	5	.81
Camula pellucida	3.35	39.36	134	21.86
Chortippus longicornis	--	2.22	7	1.14
Cratypedes neglectus	--	.63	2	.33
Dissosteira carolina	.33	.32	2	.33
Melanoplus bivittatus	.67	1.27	6	.98
M. femur-rubrum	49.66	20.63	213	34.75
M. mexicanus	43.62	24.44	207	33.77
Nymphs	2.35	3.25	33	5.38
Total specimens per environment	298	315	613	--

WASHINGTON

The percentages of individuals of the various species present in Washington, arranged according to crops infested, are summarized as follows:

<u>Alfalfa</u>	<u>Percent</u>	<u>Native grass</u>	<u>Percent</u>
1. <i>Melanoplus femur-rubrum</i> -----	50	1. <i>Camnula pellucida</i> -----	39
2. <i>M. mexicanus</i> -----	44	2. <i>M. mexicanus</i> -----	24
3. <i>Camnula pellucida</i> -----	3	3. <i>M. femur-rubrum</i> -----	21
4. <i>M. bivittatus</i> -----	1	4. <i>Chortippus longicornis</i> -----	2
5. 1 other species and nymphs----	2	5. <i>Arphia p. pseudonietana</i> -----	2
		6. 4 other species and nymphs----	12
<u>Grand total</u>		<u>Percent</u>	
1. <i>M. femur-rubrum</i> -----	35		
2. <i>M. mexicanus</i> -----	34		
3. <i>Camnula pellucida</i> -----	22		
4. <i>Chortippus longicornis</i> ---	1		
5. <i>M. bivittatus</i> -----	1		
6. 4 other species and nymphs 7			

WISCONSIN

This is the fifth year in which collections have been made in typical environments in Wisconsin during the adult survey. There were 6,717 specimens taken in 8 representative habitats, and 19 species are included in the collections. Melanoplus femur-rubrum was by far the dominant species in all 8 habitats, ranging from 63 to 80 percent of the specimens collected in these places and forming 71 percent of the total specimens collected for the State. Melanoplus mexicanus was second in numbers in 7 out of the 8 environments, ranging from 3 to 14 percent of the numbers taken in these habitats and forming 7 percent of the total collected in the State. This does not include the large number of nymphs found in the collections, which are probably M. femur-rubrum because that species hatches late in the season. Altogether, this places M. mexicanus lower in relative abundance and M. femur-rubrum higher, as compared with the 1938 collections.

In 1939 cold rains took care of most of the infestations of M. mexicanus, which hatched early in the summer. In a few counties damage was done to hay and other crops by M. femur-rubrum. Infestations were found in alfalfa, pastures, hay meadows, and some small-grain stubble.

WISCONSIN

Distribution by species of 6,717 specimens collected in Wisconsin, expressed in percentage of total number collected in each habitat

Species	Small grain	Alfalfa	Clover	Corn	Idle land	Road-side	Hay land	Pasture	Total specimens	Percent- age of grand total
<i>Ageneotettix d. deorum</i>	2.01	--	--	2.26	3.36	1.33	0.59	3.86	112	1.67
<i>Arphia pseudonietana</i>	.11	--	--	--	1.38	.53	--	.36	17	.25
<i>Arphia sulphurea</i>	--	--	--	--	--	.13	--	--	1	.01
<i>Carmula pellucida</i>	.22	0.09	0.35	.32	--	.13	.33	.29	15	.22
<i>Chortippus longicornis</i>	1.45	2.07	2.97	1.61	2.17	1.86	3.35	.87	135	2.01
<i>Dissosteira carolina</i>	--	--	--	--	--	--	--	.14	2	.03
<i>Encoptolophus sordidus</i>	.33	.09	--	.32	--	.13	.08	.14	9	.13
<i>Melanoplus angustipennis</i>	.67	--	--	--	.20	.40	--	.14	12	.18
<i>Melanoplus bivittatus</i>	--	.63	.70	--	--	.13	.17	.07	15	.22
<i>Melanoplus dawsoni</i>	--	.09	--	--	--	.26	--	--	3	.04
<i>Melanoplus femur-rubrum</i>	69.94	66.94	63.52	80.00	70.16	69.72	73.95	74.80	4773	71.07
<i>Melanoplus flavidus</i>	--	--	--	--	.59	--	--	--	3	.04
<i>Melanoplus keeleri luridus</i>	.33	.09	--	.32	.20	.13	--	.73	17	.25
<i>Melanoplus mexicanus</i>	5.70	8.44	9.08	2.90	13.64	8.63	2.34	8.30	482	7.18
<i>Orphulella pelidna</i>	.22	--	--	--	--	--	--	.07	3	.04
<i>Orphulella speciosa</i>	.11	--	.17	--	.79	.26	--	.58	16	.24
<i>Pseudopomala brachyptera</i>	--	--	.17	--	--	--	--	--	1	.01
<i>Schistocerca alutacea</i>	--	--	--	--	.39	.13	--	.14	5	.07
<i>Spharagemon collare</i>	.22	--	--	.32	.79	.53	--	.14	13	.19
<i>Nymphs</i>	18.66	21.56	23.04	11.93	6.32	15.67	19.18	9.32	1083	16.12
Total specimens per environment	895	1,113	573	310	506	753	1,194	1,373	6,717	--

WISCONSIN

The percentages of individuals of the various species present in Wisconsin, arranged according to habitats, are summarized as follows:

<u>Small grain</u>	<u>Percent</u>	<u>Alfalfa</u>	<u>Percent</u>
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Melanoplus femur-rubrum-----	70	1. Melanoplus femur-rubrum-----	67
Melanoplus mexicanus-----	6	2. Melanoplus mexicanus-----	8
Ageneotettix deorum-----	2	3. Chortippus longicornis-----	2
Chortippus longicornis-----	1	4. Melanoplus bivittatus-----	1
Melanoplus angustipennis-----	1	5. 4 other species-----	1
7 other species-----	1	6. Nymphs-----	21
Nymphs-----	19		

Clover

Corn

Melanoplus femur-rubrum-----	63	1. Melanoplus femur-rubrum-----	80
Melanoplus mexicanus-----	9	2. Melanoplus mexicanus-----	3
Chortippus longicornis-----	3	3. Ageneotettix deorum-----	2
Melanoplus bivittatus-----	1	4. Chortippus longicornis-----	2
4 other species-----	1	5. 4 other species-----	1
Nymphs-----	23	6. Nymphs-----	12

Idle land

Roadside

Melanoplus femur-rubrum-----	70	1. Melanoplus femur-rubrum-----	70
Melanoplus mexicanus-----	14	2. Melanoplus mexicanus-----	9
Ageneotettix deorum-----	3	3. Chortippus longicornis-----	2
Chortippus longicornis-----	2	4. Ageneotettix deorum-----	1
Arphia pseudonietana-----	1	5. 9 other species-----	2
6 other species-----	4	6. Nymphs-----	16
Nymphs-----	6		

Hay land

Pasture

Melanoplus femur-rubrum-----	74	1. Melanoplus femur-rubrum-----	75
Chortippus longicornis-----	3	2. Melanoplus mexicanus-----	8
Melanoplus mexicanus-----	2	3. Ageneotettix deorum-----	4
Ageneotettix deorum-----	1	4. Chortippus longicornis-----	1
3 other species-----	1	5. Melanoplus keeleri luridus---	1
Nymphs-----	19	6. 10 other species-----	2
		7. Nymphs-----	9

Grand total

Percent

1. Melanoplus femur-rubrum-----	71
2. Melanoplus mexicanus-----	7
3. Chortippus longicornis-----	2
4. Ageneotettix deorum-----	2
5. 15 other species-----	2
6. Nymphs-----	16

WYOMING

This is the sixth year in which collections have been made in Wyoming. There were 2,800 specimens collected in 5 habitats and 67 species are included in the collections. Populations were low in the State and it was difficult to find grasshoppers thick enough to get representative collections. Melanoplus mexicanus was the dominant grasshopper in the range land and some miscellaneous crops, including small grain and idle land. M. femur-rubrum was dominant in sweetclover and alfalfa. Both M. mexicanus and M. infantilis were dominant in the mountain meadows. For the infestations as a whole, M. mexicanus has decreased in relative abundance, as well as decreasing enormously in actual abundance.

Distribution by species of 2,800 specimens collected in Wyoming, expressed in percentage of total number collected in each habitat

Species	Range	Mountain meadow	Sweet-clover alfalfa	Miscellaneous crops	Idle land	Total specimens	Percentage of grand total
Acrolophus hirtipes	0.12	--	--	--	--	2	0.07
Aeoloplus turnbulli	.30	--	0.19	--	3.15	14	.50
Aeropedellus clavatus	.36	--	--	--	--	6	.21
Ageneotettix deorum	13.14	1.82	.78	1.48	1.18	232	8.28
Amphitornus coloradus	3.78	.61	--	.49	--	65	2.32
Arphia p. pseudonietana	.66	--	--	--	2.36	17	.61
Aulocara ellioti	10.92	1.82	.98	.49	--	191	6.82
Boopedon nubilum	.06	--	--	--	--	1	.03
Brachystola magna	.06	--	--	--	--	1	.03
Bruneria brunnea	.06	4.24	--	--	--	8	.29
Camula pellucida	.84	15.76	1.17	--	--	46	1.64
Chortippus longicornis	.90	1.82	--	--	--	18	.64
Circotettix rabula R. & H.	.06	--	--	--	--	1	.03
Cordillacris crenulata	.72	--	--	--	--	12	.43
Cordillacris occipitalis	1.26	--	--	--	--	21	.75
Cratypedes neglectus	--	.61	--	--	--	1	.03
Derotmema haydenii	.12	--	--	--	1.57	6	.21
Dissosteira carolina	.06	--	1.17	2.46	--	12	.43
Dissosteira longipennis	.24	--	--	--	--	4	.14
Drepanopterna femoratum	5.34	--	.19	--	--	90	3.21
Encoptolophus sordidus costalis	1.14	--	--	--	--	19	.68
Hadrotettix trifasciatus	1.20	--	.39	--	2.36	28	1.00
Hesperotettix viridis nevadensis	--	--	--	--	--	1	.03
Morse	.96	--	--	2.46	--	16	.57
Hesperotettix viridis pretensis	.54	--	--	--	.39	15	.54
Hesperotettix viridis viridis	.18	--	--	--	--	3	.11
Hypochlora alba	.06	--	--	--	--	1	.03
Melanoplus alpinus	--	1.21	--	--	--	2	.07
Melanoplus angustipennis	1.38	--	--	--	4.33	34	1.21
Melanoplus bivittatus	.12	3.64	8.01	10.84	5.51	85	3.04

WYOMING (Continued)

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Species	Range	Mountain meadow	Sweet clover alfalfa	Miscellaneous crops	Idle land	Total specimens	Percentage of grand total
Melanoplus borealis monticola	--	15.15	--	--	--	25	0.89
Melanoplus bowditchi bowditchi	0.48	--	--	--	--	8	.29
Melanoplus bowditchi canus	.48	--	0.19	--	0.39	10	.36
Melanoplus bruneri	--	.61	--	--	--	1	.03
Melanoplus dawsoni	.18	4.24	--	--	--	10	.36
Melanoplus cinerius Scudd.	--	--	--	--	--	27	.96
Melanoplus differentialis	--	--	.19	1.48	10.63	4	.14
Melanoplus femur-rubrum	1.50	1.21	45.12	22.17	--	303	10.82
Melanoplus foedus foedus	1.02	--	.19	2.46	15.35	62	2.21
Melanoplus gladstoni	.84	--	--	--	1.18	17	.61
Melanoplus infantilis	4.56	18.79	.19	--	--	108	3.86
Melanoplus mexicanus	20.29	18.79	28.71	52.71	37.01	717	25.60
Melanoplus occidentalis	1.56	--	--	--	.79	28	1.00
Melanoplus packardii	.90	1.21	1.37	.49	9.05	48	1.71
Mermiria maculipennis	.12	--	2.15	--	--	13	.46
Mestobregma plattei plattei	.12	--	--	--	--	2	.07
Metator pardalinus	2.04	--	--	--	--	34	1.21
Opeia obscura	5.04	--	--	--	--	84	3.00
Orphulella pelidna	.06	--	--	--	--	1	.03
Parapomala wyomingensis	.48	--	--	--	--	8	.29
Pardalophora haldemani	.06	--	--	--	--	1	.03
Phlibostroma quadrimaculatum	6.78	--	--	--	--	113	4.03
Phoetaliotes nebrascensis	1.44	--	1.76	--	--	33	1.18
Spharagemon collare	.60	--	.19	.98	.39	14	.50
Spharagemon equale	.78	--	--	--	1.97	18	.64
Trachyrhachis kiowa fuscifrons	.06	--	--	--	--	1	.03
Trachyrhachis kiowa kiowa	2.46	--	--	--	--	41	1.46
Trimerotropis agrestis McN.	--	--	--	--	.39	1	.03
Trimerotropis campestris	.18	1.21	--	--	--	5	.18
Trimerotropis laticincta	.12	--	--	--	--	2	.07
Trimerotropis pistrinaria	.06	--	--	--	--	1	.03
Undetermined	--	--	--	--	.39	1	.03
Nymphs	3.18	7.27	7.03	1.48	1.57	108	3.86

Total specimens per

WYOMING

The percentages of individuals of the various species present in Wyoming, arranged according to common habitats, are summarized as follows:

<u>Range</u>	<u>Percent</u>	<u>Mountain meadow</u>	<u>Percent</u>
1. <i>Melanoplus mexicanus</i> ----	20	1. <i>Melanoplus infantilis</i> ----	19
2. <i>Ageneotettix deorum</i> ----	13	2. <i>Melanoplus mexicanus</i> ----	19
3. <i>Aulocara ellioti</i> -----	11	3. <i>Cannula pellucida</i> -----	16
4. <i>Phlib. quadrimaculatum</i> --	7	4. <i>M. borealis monticola</i> ----	15
5. <i>Drepanopterna femoratum</i> --	5	5. <i>Bruneria brunnea</i> -----	4
6. 48 other species-----	41	6. <i>Melanoplus dawsoni</i> -----	4
7. Nymphs-----	3	7. 18 other species-----	16
		8. Nymphs-----	7

Sweetclover and alfalfa

1. <i>Melanoplus femur-rubrum</i> --	45
2. <i>Melanoplus mexicanus</i> ----	29
3. <i>Melanoplus bivittatus</i> ---	8
4. <i>Mermiria maculipennis</i> ---	2
5. <i>Phoetaliotes nebrascensis</i>	2
6. 19 other species-----	7
7. Nymphs-----	7

Miscellaneous crops

1. <i>Melanoplus mexicanus</i> ----	53
2. <i>Melanoplus femur-rubrum</i> --	22
3. <i>Melanoplus bivittatus</i> ---	11
4. <i>Dissosteira carolina</i> -----	2
5. <i>Hesp. viridis pratensis</i> --	2
6. <i>Melanoplus foedus foedus</i> --	2
7. 13 other species-----	7
8. Nymphs-----	1

Idle land

1. <i>Melanoplus mexicanus</i> ----	37
2. <i>Melanoplus foedus foedus</i>	15
3. <i>Melanoplus cinerius</i> -----	11
4. <i>Melanoplus packardii</i> ----	9
5. <i>Melanoplus bivittatus</i> ---	6
6. 20 other species-----	20
7. Nymphs-----	2

Grand total

1. <i>Melanoplus mexicanus</i> ----	26
2. <i>Melanoplus femur-rubrum</i> --	11
3. <i>Ageneotettix deorum</i> -----	8
4. <i>Aulocara ellioti</i> -----	7
5. <i>Phlib. quadrimaculatum</i> ---	4
6. 62 other species-----	40
7. Nymphs-----	4

THE MORE IMPORTANT RECORDS FOR JULY

In general throughout the West grasshopper infestations are lighter than they have been for several years. Early in July heavy infestations occurred in southeastern Arizona, the dominant species being Melanoplus mexicanus. It is estimated that a million acres of range and desert lands are infested. Similar infestation occurred in west-central New Mexico, but in these infestations the dominant species is M. differentialis. During the middle of the month migrations of grasshoppers into grain was reported from northeastern Colorado. Oviposition by grasshoppers was general in western Kansas during the third week in July. In the two western tiers of counties in that State damage was decidedly on the increase. Heavy infestations of M. bivittatus and M. packardii occurred in scattered localities in Utah. Considerable damage by grasshoppers occurred in the central part of South Dakota, and lighter infestations were scattered over the southern part of the State. Local infestations occurred throughout the Plains States and eastward to Ohio and Kentucky.

Mormon cricket infestations are reduced and largely localized. The most severe infestation is in range land in the tristate area of Idaho, Nevada, and Oregon. Several large bands were moving from Idaho County into Beaverhead County, Mont. Localized infestations are present in eastern Sheridan County, Wyo., and similar migrations of these insects are also reported from Clark, Bingham, Fremont, Jefferson, and Madison Counties, Idaho. Washington and Oregon also reported migrations under way but reduced to noneconomic importance.

European earwig is generally abundant in eastern Massachusetts, Rhode Island, and southeastern New York. Considerable damage to garden crops by these insects was reported from southwest Washington State.

Damage to turf by white grubs and some defoliation of elms and fruit trees by June beetles is reported from southern Maryland and southeastern Virginia.

Japanese beetle was generally abundant and in parts of New England and in the northern half of Maryland and on the Eastern Shore of Maryland and Virginia and the Norfolk, Va., area was more abundant than last season.

Heavy infestations of alfalfa by the variegated cutworm are reported in the Uinta Basin of Utah.

A heavy infestation by the webworm Loxostege sticticalis occurred in the Big Horn Basin of Wyoming, where some sugar beet fields were completely destroyed and heavy damage was done to a variety of truck crops. This insect was also troublesome in South Dakota and Utah.

Damage by hessian fly to wheat is reported from Ohio, with severe damage reported from North Dakota, Nebraska, and Kansas.

Chinch bug in the East Central States has been materially reduced by rain.

During the month corn ear worm was quite generally reported as damaging sweet corn over the greater part of the country south of New England and westward to Utah.

Decided increase in the European corn borer populations was reported from New York and Pennsylvania westward to Indiana and Illinois.

The report on alfalfa weevil in Ohio in the last number of the Survey Bulletin was due to a misdetermination (see p. 421 of this issue).

Infestation by second-brood codling moth larvae was generally light to moderate throughout the country, with the exception of somewhat heavy infestations in parts of Ohio and Illinois. Second-brood moths began emerging during the first week in the month in southern Indiana, Missouri, and Virginia. During the second week emergence was well under way in northern Missouri, Michigan, Ohio, and Pennsylvania, and during the third week in northern Illinois, New York, and Wisconsin. Adults were emerging in numbers in Washington State during the second week in July.

European red mite is reported damaging fruit trees from Pennsylvania, Ohio, and Michigan.

Second brood of the plum curculio began to appear in late June and early July in the South Atlantic States. The curculio are somewhat earlier than normal and the peaches are somewhat later, resulting in considerable damage to midseason and late varieties.

Oriental fruit moth was reported as generally below normal in numbers in the New England and Middle Atlantic States. In Louisiana, however, the insect is more abundant than heretofore.

The pecan nut case-bearer very seriously damaged the pecan crop in the vicinity of Crystal City, Tex.

Heavy infestations of Florida red scale are reported from parts of Florida.

The citrus rust mite, though very abundant early in the month, has in most cases been brought under control by heavy rains in Florida.

Blister beetles are becoming increasingly abundant in the Mississippi Valley and Great Plains States.

Potato flea beetle was reported as seriously damaging potatoes and tomatoes from Connecticut westward to the Dakotas and Colorado. We also received reports of damage from Utah and Washington.

Aphids attacking tomatoes were reported from New England westward to Ohio.

Potato leaf hopper was producing hopper burn on potatoes on Long Island, New York, in eastern Pennsylvania, thence westward to the Dakotas and Nebraska.

Tomato hornworms were generally prevalent in the southern Middle Atlantic States and in the Gulf region. Heavy infestations were also reported from Utah and California.

Mexican bean beetle was more destructively abundant in Maine than it has ever been since its appearance in that State. Throughout most of the country, however, the infestations are below normal.

The western 12-spotted cucumber beetle damaged beans as high as 50 percent of the crop in the Sacramento Valley of California.

The squash borer was generally prevalent and destructive in the Middle Atlantic States and the Gulf region and in scattered localities westward to Kansas.

Pepper weevil very abundant in early pepper fields in southern California, in some cases the entire crop being lost.

Tobacco thrips was more abundant on shade grown tobacco than it has been for several years in Gadsen County, Fla.

Boll weevil is in extremely heavy infestations throughout the Cotton Belt from the Atlantic Coast to central Oklahoma and Texas.

During the latter part of the month cotton leaf worm was observed in Texas, Louisiana, Mississippi and Florida.* By the third week in the month complete stripping of the cotton was recorded in many fields in the Brownsville area of Texas.

Elm leaf beetle is moderate to very abundant in the New England States and the Middle Atlantic States as far south as New Jersey. We also have reports of the prevalence of this insect in limited areas of Virginia, Ohio, Utah, and Washington.

The larch case bearer was severely damaging larch trees in Maine and Massachusetts.

In the Middle Atlantic States from Connecticut southward to Virginia and westward to Ohio the locust leaf miner is so abundant that practically all of the foliage is browned over large areas. We also received report of heavy infestations by this insect in Mississippi.

A chrysomelid beetle Baliosus ruber Web. seriously browned the foliage of red oak trees in the southern part of Mississippi and Louisiana.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

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Arizona. B. M. Gaddis and assistants (July 6-12): Heavy infestation in the Sulphur Springs Valley of Cochise and Graham Counties, in southeastern Arizona, remains about the same. Surrounding areas showed increased Melanoplus mexicanus Sauss. populations, indicating some dispersal, with adult hoppers numbering as high as 10 to 15 per square yard. An infestation of Schistocerca shoshone Thos. developed in the mesquite flats of the lower portion of the Sulphur Springs Valley, where orchards and field crops on isolated farms were attacked. M. mexicanus was the dominant species throughout the southern half of the State, which contains the greater part of the farmed areas of Arizona. The species represented approximately 75 percent of the 'hopper populations, while M. differentialis Thos. and Trimerotropis pallidipennis Burm. comprised 15 and 10 percent, respectively. All M. mexicanus were adults and in cultivated fields egg deposition was in progress. M. differentialis is confined generally to scattered areas in the irrigated sections of Maricopa County. A severe infestation of M. bivittatus Say was reported in the small mountain valley areas along small streams and in irrigated and dry farm fields in southern Apache County. (July 13-19): Infestations, of which M. bivittatus was the dominant species, in southern Apache County remained serious, with heavy populations in fields and meadow areas of the small valleys. Heavy populations also were reported on the Apache Indian Reservation. Infestations of lighter intensity were reported from Navajo County. M. mexicanus in Cochise and Graham Counties is estimated to infest approximately 1,000,000 acres of range and desert lands and 5,000 acres of crop lands.

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New Mexico. (July 6-12): In the west-central counties of Valencia and Socorro, M. differentialis comprised approximately 70 percent and M. foveolatus Deg. about 20 percent of the 'hopper populations, of which 10 percent were in the adult stage. Populations in alfalfa fields ran as high as 25 per square yard and along field margins to 75 per square yard. A few scattered Dissosteira longipennis Thos. were reported at widely separated points in Chaves, Roosevelt, and Lea Counties.

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Colorado. (July 6-12): An infestation of Camnula pellucida Scudd. in Grand County, north-central Colorado, is estimated to cover from 2,500 to 3,000 acres in the low meadowlands along the Colorado River around Kremmling. Localized populations numbered as high as 1,000 per square yard, but adults were beginning to scatter. Damage to alfalfa and native hay was severe. (July 13-19): In northeastern Colorado migrations into crops have begun with completion of the grain harvest and damage to barley, rye, and wheat increased noticeably during the week. Very light population increases due to flights were noted in Adams, Arapahoe, Elbert, and Lincoln Counties, indicating that a gradual westward migration was still in progress. An examination

1/ Where no name is given after the State the report is by B. M. Gaddis and assistants.

of M. mexicanus eggs in Kit Carson County indicated that hatching of a second generation may begin before August 1. The most heavily infested county, insofar as M. bivittatus and M. differentialis are concerned, is Montezuma in the southwestern part of the State. Populations of 50 to 200 per square yard in margins and from 6 to 30 in alfalfa, wheat, and barley were present. C. pellucida populations in Grand County were greatly reduced through baiting and movement of adults to adjacent meadows; however, heavier areas still contained approximately 400 per square yard. Injury to meadow hay was severe in the more heavily populated areas and an estimated 35-percent damage had occurred over the infested area as a whole.

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Texas. (July 13-19): M. mexicanus represented approximately 80 percent of the populations in the northeastern part of the Texas Panhandle and about 95 percent were adults. Heaviest populations were reported in Hansford and Ochiltree Counties, marginal concentrations running as high as 50, and field populations as high as 25 per square yard. Light flights moving south and occasionally southwest were reported during the week. Wheat harvest in the area was about 80 percent complete.

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Oklahoma. (July 13-19): M. mexicanus remained the dominant species in the Panhandle, comprising 70 percent of the populations, followed in order by M. differentialis and M. bivittatus. Approximately 50 percent of M. differentialis and 95 percent of M. mexicanus and M. bivittatus were in the adult stage. Light flights were reported almost daily throughout the week, movement in general being to the south and occasionally to the southwest.

F. A. Fenton (July 23): Severe local infestation of M. bivittatus occurred in alfalfa near Taft, in Muskogee County.

Kansas. B. M. Gaddis (July 13-19): M. mexicanus populations in Sherman, Thomas, Sheridan, Gove, Scott, Kearny, Grant, and Stanton Counties, in western Kansas, averaged 10 per square yard in small-grain stubble and alfalfa, while infestations in abandoned and woody lands ran up to 10 per square yard. M. bivittatus and M. differentialis, which ranked next to M. mexicanus in numbers, were most numerous in the irrigated areas of western Kansas and in the dryland areas of central Kansas. In the western part of the State most hoppers were adult and oviposition was general. Considerable increase in crop damage was noted in the 2 western tiers of counties; barley damage by head cutting had increased to about 15 percent of the total original anticipated yield and damage to wheat and rye amounted to about 10 percent for each crop. Flights were reported daily as from very light to light, the general direction being slightly south of west.

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Nebraska. (July 6-12): Grasshopper populations throughout the Panhandle of Nebraska remained very light, with the exception of a few local concentrations. In the southwestern counties M. mexicanus represented 35 percent, M. bivittatus 20 percent, Aeoloplus turnbullii Thos. 15 percent, and M. packardii Scudd., M. occidentalis Thos., and M. confusus Scudd. 25 percent of the populations. Approximately 90 percent were in the adult stage. Owing to drying up of roadsides

and marginal vegetation, 'hoppers were moving into fields and slight damage was apparent in most areas. Populations in alfalfa averaged about 35 per square yard, along roadsides and field margins about 45, and in small grains and stubble fields about 8 per square yard.

M. mexicanus was reported ovipositing in Redwillow County July 8. From light to moderate dispersal of M. mexicanus was reported daily in the counties of southwestern Nebraska, moving in all directions except due north. (July 13-19): M. mexicanus and M. bivittatus in the northeastern portion of the State were practically 100 percent adult. Approximately 50 percent of M. differentialis had reached the adult stage and mating was reported on July 17. Marginal damage to alfalfa in the more heavily infested counties was much more noticeable and some leaf damage to corn was evident as grain was harvested. Light flights of M. mexicanus were reported daily in southwestern Nebraska; however, they were lighter than in previous weeks. In the south-central and eastern parts, most species were 90 to 95 percent adult and M. differentialis was 60 percent adult.

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Nevada. (July 6-12): Scattered bands of adult M. occidentalis were reported in the infested areas of Nye, Lander, and Eureka Counties. A check of the situation in Churchill, Lyon, Nye, and Washoe Counties revealed populations of noneconomic importance. Approximately 90 percent were adults and oviposition had begun.

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California. (July 13-19): Infestation of M. mexicanus in Imperial County was very light, in comparison with previous years. Infestations, predominantly M. devastator Scudd., were rather heavy in San Diego County. In Fresno and Tulare Counties they were moving by short flights from range lands into citrus and other crops. Migrations of this species from range land into crops was reported in Kern County. Infestations in Calaveras, Tuolumne, and Mariposa Counties were much lighter than last year. Oedalconotus onigma Scudd. were still very numerous in relatively restricted areas in the Panoche district of San Benito County. Grasshoppers were not as populous in Humboldt County as they were in 1940 and are no longer a menace.

S. Lockwood (July 9): Adults of M. devastator are reported to be migrating from range land to cropped areas in central Siskiyou County. Short flights from grainfields to citrus are occurring in the Sierra foothill region of Tulare County.

Idaho. B. M. Gaddis (July 6-12): In southwestern Idaho localized concentrations of M. mexicanus in alfalfa fields ran to 200 per square yard and in several instances, damage was severe to alfalfa and grain in fields bordering on the range. (July 13-19): M. mexicanus was the dominant species in western Idaho, with practically all in the adult stage. In eastern Idaho, where M. femur-rubrum is dominant, the species ranged in development from second-instar nymphs to adults.

Utah. G. F. Knowlton and F. C. Harnston (July 5): Damage continued to be severe throughout the eastern part of Millard County, where second-crop alfalfa has been severely injured on several thousand acres. Moderate to severe damage is occurring on potatoes and corn in Piute and Beaver Counties. At Callao, in western Juab County, an unusually severe infestation of M. bivittatus and M. packardii is present over

an area of 3,000 acres, one-third of which is cropped land. Populations in alfalfa fields average 60 per square yard, with populations along ditch bands and small grain margins running as high as 250 per square yard. The grasshoppers are 95 percent adult. M. bivittatus, M. packardii, and M. mexicanus, approximately equal in numbers, comprise populations in the central and west-central areas of Utah. Seventy-five percent are adults in areas visited during the week. Mating of M. packardii and M. mexicanus was observed over wide areas. O. enigma and Aulocara elliotti Thos., two of the more important species in Nephi Valley of Juab County, are 95 percent adult and mating was observed. (July 12): Heavy infestations were found in Sanpete County, where M. mexicanus represents 80 percent and C. pellucida 10 percent. Severe damage to alfalfa was observed at Fountain Green, where 100 percent leaf stripping was noted on several large fields. An extremely heavy infestation of C. pellucida was found in the meadow lands extending from Ephraim to Manti, where 'hoppers were estimated number from 40 to 500 per square yard. In Tooele County heavy populations were found, M. mexicanus representing 80 percent and M. bivittatus 10 percent. Alfalfa fields in infested areas were found to have populations ranging from 10 to 40 per square yard, with a field average of 20 per square yard. In general, damage is confined to the margins, although 25-percent stripping of leaves was observed on several fields in Skull Valley. Wheat fields planted under thorough cultivation practices were relatively free.

Montana. B. M. Gaddis (July 13-19): M. mexicanus comprised approximately 80 percent and M. bivittatus 20 percent of the populations throughout most areas of south-central Montana. In Sweet Grass County, M. bivittatus constituted about 80 percent of the populations and in northeastern Yellowstone County M. mexicanus made up almost 100 percent. M. bivittatus and M. mexicanus comprised most of the population in northeastern Montana, 25 percent being in the adult stage. In the north-central counties of Chouteau, Cascade, Judith Basin, Pondera, and Teton, most of the 'hoppers were adult. Light flights moving west were reported over Dutton, in Teton County, on July 14 and moving north over Havre, in Hill County, on July 19.

Wyoming. B. T. Snipes (July 22): Heavy infestations of M. bivittatus, M. femur-rubrum, and M. packardii are present in parts of Park, Big Horn, Washakie, Fremont, and Sheridan Counties. Many are adult and mating and egg deposition have begun in most localities. M. bivittatus is the dominant species, with M. femur-rubrum second in importance.

B. M. Gaddis (July 6-12): A. turnbullii populations were present over wide areas of range land in Big Horn County, ranging from 2 to 6 per square yard, with roadside populations considerably heavier and 80 percent adult. Some marginal damage to sugar beets was reported in fields adjacent to range lands. A rather severe infestation, 4 miles long and 2 miles wide, was reported in Fremont County. The dominant species was C. pellucida, which comprised 60 percent of the populations, 80 percent being adults. Field counts ranged from 12 to 50 per square yard. (July 13-19): M. bivittatus was the dominant species in Sheridan County, where approximately 30 percent were adults. Rather

heavy infestations were present in portions of Park, Big Horn, Washakie, Sheridan, and Fremont Counties.

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North Dakota. (July 6-12): Throughout southeastern North Dakota, populations remained light and no crop damage of any consequence was reported. The grasshoppers remained along margins, except in a few instances, and the slight leaf damage which occurred was confined to a few yards into the fields. Approximately 20 percent were adults, except in northern Cass County and the sandy areas of Sargent County, where from 80 to 90 percent of M. bivittatus were adults. In north-central and northeastern North Dakota leaf damage was negligible and dispersal of M. bivittatus into fields was only slight. Fungous disease was reported in Pembina, Ramsey, and Walsh Counties; however, it amounted to less than 2 percent as a whole. No flights other than local movements and dispersion were reported in the State. (July 13-19): Most damage in northeastern North Dakota occurred primarily in Pembina County; however, the damage amounted to less than 2 percent of the crops in the infested areas. Fields with heavy populations several weeks ago showed a dispersal averaging about 40 percent.

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South Dakota. (July 6-12): In northeastern and north-central South Dakota, grasshoppers were dispersing generally; however, flights appeared to be only of short duration and did not cover great distances. M. differentialis in these areas ranged from third- to fifth-instar nymphs, while M. mexicanus, M. bivittatus, M. packardii, and A. turnbullii were mainly adults. In central South Dakota, east of the Missouri River, practically all M. bivittatus and M. mexicanus were adults, while only 20 percent of M. differentialis had reached that stage. Many M. bivittatus were ovipositing. Damage to small grain increased during the week in that section of the State, as a result of head clipping and shelling of ripe corn, which had not been harvested. In the extreme southeastern counties a few adult M. differentialis were appearing, while from 75 to 90 percent of M. bivittatus and M. mexicanus were adults. Over 75 percent of the small grain in that area had been harvested. In south-central South Dakota, M. bivittatus and M. mexicanus were practically all adults. Light flights occurred daily and populations in the M. bivittatus infested areas were materially reduced. Considerable damage occurred, but did not exceed 10 percent. (July 13-19): Grasshoppers in general, with the exception of M. differentialis, were 90 percent adults and oviposition by M. bivittatus was reported. M. differentialis was predominantly in the fifth instar; however, the species was rapidly becoming adult. In central and south-central South Dakota, M. mexicanus was supplanting M. bivittatus in various areas as the dominant species. East of the Missouri River, in southern South Dakota, and in the northern portion of the State, M. differentialis was commonly dominant. Considerable head clipping in wheat and barley fields occurred during the last 10 days. Injury to small grains for the State as a whole was estimated at about 10 to 12 percent. Greatest injury occurred in the central areas. A general movement of grasshoppers from stubble fields into corn and sorghum was in progress. Flights continued throughout the week with more grasshoppers in the air than at any time previously in the season.

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 Minnesota. (June 29-July 5): Grasshopper development was somewhat retarded in northwestern Minnesota during the past week, owing to cool temperatures. Between 40 and 50 percent of M. bivittatus were adult, with 50 percent fifth instar. M. bivittatus was mating and 1 percent of the females contained eggs which were 75 percent developed. From 50 to 60 percent of the 'hoppers in western Kittson and western Marshall Counties were found to be parasitized by nematodes. Further movement into small grains was apparent and 50-percent leaf damage was noted; the average, however, probably did not exceed 15 percent. In central Minnesota no infestations of economic importance were reported. M. femur-rubrum, the dominant species in most areas of that section, was primarily in the second instar. The hatch of M. differentialis and M. bivittatus in southwestern Minnesota was nearly complete. M. differentialis was the dominant species with the majority second-, third-, and fourth-instar nymphs. (July 13-19) M. femur-rubrum was reported to be showing a decided increase in numbers over 1940 in the southwestern portion of the State, where approximately 50 percent of M. bivittatus were adults. M. differentialis had not yet reached the adult stage. As grain was harvested the grasshoppers rapidly moved into corn and barley fields. In northwestern Minnesota flights of M. bivittatus, M. mexicanus, and C. pellucida occurred daily and oviposition of M. bivittatus was increasing.

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 Iowa. (July 6-12): Several counties in the western part of the State were reported to have heavy populations of M. bivittatus and M. mexicanus in about equal numbers in local areas; a large part of the population was confined to heavy stands of sweetclover and alfalfa and little damage is evident. Heaviest concentrations were reported in Monona and Harrison Counties.

Missouri. L. Haseman (July 28): Numbers through central and southern Missouri have continued light, except on scattered farms. M. bivittatus has been mating and ovipositing since July 10, and by July 20 limited numbers of M. differentialis were approaching maturity.

Arkansas. B. M. Gaddis (June 22-28): Infestations in northeastern Arkansas were reported to be spotted but extremely heavy in localized areas. M. differentialis is the dominant species.

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 Wisconsin. (June 22-28): Throughout southern Wisconsin, the dominant species is M. bivittatus, of which the greater number were fourth- and fifth-instar nymphs. In the northwestern portion of the State, where grasshoppers have been numerous in past years, the numbers are reported to be quite small. (July 6-12): In central Wisconsin many grasshoppers were reaching the adult stage; however, in some areas hatching was just beginning and in other areas first-, second-, and third-instar nymphs of M. femur-rubrum predominated.

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 Michigan. (July 6-12): M. mexicanus remained the dominant species in the northern half of the Lower Peninsula of Michigan, with Ageneotettix deorum Scudd. second in economic importance. C. pellucida and M. bivittatus seldom exceeded 5 percent of the populations.

For the area as a whole, approximately 30 percent of the grasshoppers had reached the adult stage; M. mexicanus was mating. Light damage to alfalfa, beans, buckwheat, cabbage, and strawberries continued. (July 13-19): Throughout the counties of north-central and north-eastern Michigan, M. mexicanus constituted about 80 percent of the grasshopper population. In the north-central counties, grasshopper development was well advanced, with about 40 percent in the adult stage. In the northeastern counties, especially those bordering on Lake Huron, development was less advanced and only about 10 percent were adults.

Illinois. W. P. Flint (July 22): Very heavy infestation of M. bivittatus and M. mexicanus spretus Walsh in an area about 10 miles long by 3 miles wide, in Grundy County, north-central Illinois. Large numbers of grasshoppers died from disease.

Indiana. J. J. Davis (July 23): Grasshoppers have been important pests during the last month. A notable outbreak, resulting in considerable damage, was reported from Brownstown, in the extreme southern part of the State. Most of the grasshopper outbreaks have been in the northwest corner of the State.

Ohio. T. H. Parks (July 24): Local infestations continue to be reported from central and southern counties, where they have hatched in favored spots and have migrated into gardens, soybeans, and flower plantings.

Kentucky. W.A. Price (June 24): Very abundant and causing some damage to corn, tobacco, and vegetable crops in central and northern Kentucky.

MORMON CRICKET (Anabrus simplex Hald.)

South Dakota. H. C. Severin and G. I. Gilbertson (June 28): Largely confined to Lyman County, where they have done more damage than usual. Infestation started in the northern half of the county and large numbers have moved to the southern half.

Montana. B. M. Gaddis (June 29-July 5): Only light scattered infestations present over a wide area of Yellowstone County. (July 6-12): Ranged from fifth-instar nymphs to adults along the Idaho-Montana line. Several large bands were moving along a 4-mile front from Idaho into Beaverhead County. Migrations continued in the infested area southwest of Hardin in Big Horn County and some crickets entered croplands. Crickets were mating but no oviposition was noted.

Wyoming. B. T. Snipes (July 22): Heavy infestations are present in eastern Sheridan County where some damage to hay and grain has occurred. Scattered bands are present on top of the Big Horn Mountains, but no extensive migratory tendencies are evident. Heaviest infestations are on the lower slopes of the Owl Creek Mountains and in the vicinity of Thermopolis. In Crook County little or no crop damage was occasioned because of control operations. (July 13-19): Migrations continued in Hot Springs County throughout the early part of the week. In Sheridan County migrations slackened, owing to the hot weather. Oviposition was in progress. In Crook County all crickets were adults;

however, egg deposition had not started. In the Big Horn Mountains of Sheridan County, no cricket infestations that might constitute a threat to crop areas have been observed. Populations appeared to be light and scattered and in the few restricted areas where they appeared in considerable numbers they showed little tendency to migrate.

Utah. G. F. Knowlton and H. F. Thornley (July 12): Moderate to heavy infestations are still present in the west Vernon and Government Creek areas of Tooele County. Approximately 95 percent of the crickets are now in the adult stage and 10 to 20 percent are laying eggs.

Idaho. B. M. Gaddis (July 6-12): Heavy migrations continued in eastern Idaho in Clark, Bingham, Jefferson, Fremont, and Madison Counties. From 50 to 80 percent of the crickets at the lower elevations in the eastern part of the State were ovipositing. In southwestern Idaho Mormon cricket bands in the mud flats area of Owyhee County were still scattered; however, the crickets were beginning to bunch and migrations became rapid. Seventy percent of the crickets in this area were sixth- and seventh-instar nymphs and 20 percent were adults. In Twin Falls County adult crickets were moving into the higher areas. (July 13-19): Fairly heavy migrations continued in Clark County, but in Jefferson, Madison, and Fremont Counties, migrations were less extensive than during previous weeks. Crickets in all areas except in the higher altitudes of Clark County were adults and approximately 80 percent were ovipositing.

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Nevada. (June 29-July 5): Crickets throughout most of the infested areas in the State were adults; however, development, as compared with last season, is much later. During the 1940 season, crickets in the Elko area were ovipositing by June 13, whereas this season copulation was not noted until about June 17. Oviposition was reported during the week in several areas of Pershing, Humboldt, Lander, and Elko Counties. Extensive migrations were occurring in several areas; however, in many localities crickets were still concentrated in relatively small bands. (July 13-19): Peak of migrations in the infested areas was reached during the week and oviposition had begun in practically all areas. In the Bullion and Jiggs areas in Elko County, oviposition was first noted on July 14, almost a month later than first noted in this area in 1940.

Washington. B. M. Gaddis (June 29-July 5): Peak of oviposition was passed in Franklin and Yakima Counties and migrations had almost ceased by the close of the week.

Oregon. (June 22-28): Two heavy migrations were in progress during the week in the northern part of the Warm Spring Indian Reservation. One band was moving northeast toward the Deschutes River and another was moving toward the southwest. In the area north of the Warm Spring River oviposition was about 40 percent complete. Crickets were concentrating mostly on the south and southwestern slopes in favorable egg laying localities. In Baker County, approximately 75 percent of the crickets had reached the adult stage and copulation was noted by June 25. In Gilliam County the peak of oviposition

was reached during the week and there was only a slight tendency to migrate toward crop areas. (June 29-July 5): Large migrations were reported moving from the table lands in Malheur County, threatening crops in that area. On the Warm Spring Indian Reservation, in Wasco and Jefferson Counties, approximately 90 percent of the crickets had completed egg deposition. An occasional small band high in the Mutton Mountains could still be found, females of which contained 60 percent of their eggs. All migrations had ceased and females had passed the peak of oviposition in Gilliam County. In Baker County migrations increased, owing to the warmer weather.

EUROPEAN EARWIG (Forficula auricularia L.)

- Massachusetts. A. I. Bourne (July 23): Reported as abundant in gardens, and in some cases invading houses in New Bedford, Fall River, Taunton, and southern Bristol County.
- Rhode Island. B. Eddy (July 10): Infestation is extremely heavy in Newport, Bristol, and Washington Counties.
- New York. R. E. Horsey (July 15): Reported as present in houses at Rochester.
- Utah. G. F. Knowlton (July 1): Causing much annoyance in homes and gardens at Farmington and Bountiful, Davis County.
- Washington. C. W. Getzendauer (July 16): Fourth-instar nymphs and adults are numerous in gardens at Union Gap. Considerable damage has occurred in home gardens to beans, swiss chard, hollyhocks, and zinnias, and light feeding has occurred on tomatoes and asparagus.

MAY BEETLES (Phyllophaga spp.)

- Connecticut. J. P. Johnson (July 22): White grubs damaged the lawns on two small estates in Litchfield and one in Sharon.
- Maryland. E. N. Cory (July 15): Brown beetles, probably Phyllophaga sp., causing some damage to elms, English walnuts, oak, and apples in Charles and St. Marys Counties.
- Virginia. S. B. Fenne (July 12): May beetles are severe on apple, shrubs, and other plants in restricted areas of James City and Charles City Counties.
- H. G. Walker and L. D. Anderson (July 25): June beetles reported as defoliating apple trees and several kinds of shade trees in the Norfolk area.
- Indiana. J. J. Davis (July 5): White grubs were noticeable today on strawberries at Terre Haute.
- Minnesota. A. G. Ruggles and assistants (July): White grubs are moderately abundant in Ramsey County and are injurious to pastures, strawberries, flower gardens, and golf courses. Broods "C" and "A" are common in the

fields.

Kansas. H. R. Bryson (July 24): Adults of wheat white grub (P. lanceola Say) were abundant on lead plant (Amorpha canescens) from June 6 to July 18. Many of the plants at Manhattan were defoliated. Increase in number of beetles on prairies in the vicinity of Manhattan has been more marked than ever before, according to collection records.

A SCARABÆID (Cyclocephala borealis Arrow)

Connecticut. E. P. Felt (June 23): Reported as troublesome in lawns in the Danbury area.

Virginia. M. P. Jones (June 30): Thousands of beetles were observed hovering over lawns at Arlington, soon after dusk on the night of June 24, most of them being within 2 feet of the ground. On June 26, just before dusk, they were observed swarming over lawns so thickly that, by swinging an open hand once, one could catch three or four beetles. Many on the ground were mating. (Det. by E. A. Chapin.)

GREEN JUNE BEETLE (Cotinis nitida L.)

Virginia. C. H. Hadley (July 9): Beetles swarming over lawn at a country club at Arlington.

A. M. Woodside (July 24): Very common in codling moth bait traps during last 2 weeks in Augusta County.

Pennsylvania. T. L. Guyton (July 10): Numerous on lawn on Route 1, Gettysburg.

Ohio. T. H. Parks (July 24): Adults received from several counties of southern Ohio, where they are reported as laying eggs in lawns.

JAPANESE BEETLE (Popillia japonica Newm.)

Vermont. H. L. Bailey (July 24): Adults first reported on June 29 at White River Junction, Windsor County, in the eastern part of the State. Moderately abundant on July 22.

Massachusetts. A. I. Bourne (July 23): Reported as unusually abundant in mid-June and early July in points in the city of Northampton on the west bank of the Connecticut River, and later specimens have been obtained from the town of Hadley just east of the Northampton infestation.

Connecticut. J. P. Johnson (July 22): More numerous and widespread than in previous years. Defoliation is increasing.

Rhode Island. B. Eddy (July 5): Spreading to new areas and abnormally heavy in old areas around Providence.

New York. N. Y. State Coll. Agr. News Letter (June 30): Beetles started to emerge on June 24 in Westchester County. (July): In eastern New York, on Long Island, adults are out and feeding on various crops. In Rockland and Dutchess Counties severe foliage damage is occurring on ornamental trees and shrubs, and flowers and fruits are being destroyed.

Delaware. L. A. Stearns (July 18): Damage much lighter in New Castle County than last year but very severe throughout much of Kent County. Injury light to moderate in parts of Sussex County.

Pennsylvania. B. F. Coon (July 11): Now very abundant around Lancaster. Heavy feeding on corn foliage and some feeding on tassels. Silks of sweet corn are being devoured when present, and soybeans, potatoes, rhubarb, asparagus, tobacco, beans, and various wood hosts are being injured.

T. L. Guyton (July 18): Feeding on Desmodium sp. on an island at West Aliquippa, in Beaver County, and destroying flowers and vegetables at Newton Hamilton, Mifflin County.

C. F. Campbell (July 25): Population is on the increase in the Wilkes-Barre district, and in several of the smaller cities and towns in the immediate environs, attacking roses and grapes. Many small lawns have been destroyed.

Maryland. D. D. Millspaugh (July 24): Observed at the Aberdeen Proving Ground.

Virginia. H. G. Walker and L. D. Anderson (July 25): Much more abundant in the Norfolk area and on the Eastern Shore than last year, and 10,454 beetles have been caught in 24 traps to date at the experiment station, which is more than 6 times as many as were caught during the entire season last year. Peak of abundance is past.

ROSE CHAFER (Macrodactylus subspinosus F.)

Rhode Island. B. Eddy (July 10): Infestation is general.

Maryland. C. Graham (June 9): Light damage to peaches near Easton, and to grapes and cherries in the Cavetown area, with serious damage to red raspberries in the same area. Found feeding on Japanese iris and persimmons at College Park.

Michigan. R. Hutson (July 23): Reported from many localities throughout the southern half of the State.

BEETLES (Scarabaeidae)

Rhode Island. B. Eddy (July 10): General infestation of Pachystethus lucicola F.

Virginia. W. J. Schoene (July 18): Anomala undulata Melsh. reported damaging apples on a single tree, presumably at Chilhowie. (Det. by E. A. Chapin.)

Alabama. J. M. Robinson (July 13): A. undulata found on corn and beans Section.

Missouri. A. C. Burrill (June 29): Shining brown anomala (P. lucicola F.) is appearing at night lights and in sinks in houses in Jefferson City, Cole County.

CARROT BEETLE (Ligyrus gibbosus Deg.)

South Dakota. H. C. Severin, et al. (June 28): Many adults present and attracted in large numbers to lights.

Nebraska. H. D. Tate (July 17): Specimens submitted from Franklin County on June 17 and from York County on June 18, with report that they were attacking sunflowers.

IMPORTED LONG-HORNED WEEVIL (Calonycterus setarius Roelofs)

Connecticut. J. P. Johnson (July 22): Adults very numerous on lespedeza at Stratford. Weevils were reported invading houses in small number

A LEAF BEETLE (Antipus laticlavata Forst.)

Missouri. L. Hasenan (July 28): Between July 1 and 15 there was a very heavy migration. Black locust, smartweed, and a variety of other plants were heavily defoliated. Observed mating on July 20 and had almost disappeared from their familiar feeding grounds in the next day or two.

A WIREWORM (Monocrepidius bellus Say)

Mississippi. C. Lyle (July 24): Number of specimens received from Monroe County, with report that they were found on watermelon vines.

SAY'S BLISTER BEETLE (Pomphopoea sayi Lec.)

Massachusetts. A. I. Bourne (July 23): Reported as present in great abundance and causing considerable damage during June to foliage of roses and peaches, and to lupine blossoms in western Hampden County, and from points in Berkshire County, both localities being among the Berkshire Hills.

New York. E. P. Felt (June 23): Reported as abundant and feeding in great numbers in mid-June on locust and cherry blossoms at Mohonk Lake, in Ulster County.

SAND WIREWORM (Horistonotus uhleri Horn)

Louisiana. C. O. Eddy (July 24): Active in a very wide area but below average in destructiveness.

CUTWORMS (Phalaenidae)

Indiana. J. J. Davis (July 10): Yellow-striped armyworm (Prodenia ornithogalli Guen.) reported as causing considerable damage to tobacco at Vevay, in the extreme southeastern end of the State.

- South Dakota. H. C. Severin and G. I. Gilbertson (June 28): Cutworms have continued their injurious work later than they have for many years in the past.
- Iowa. C. J. Drake (June 21): A cutworm, Crymodes devastator Brace, has destroyed about 5 to 10 percent of a large field of corn near Marshalltown. (Det. by C. Heinrich.)
- Nebraska. H. D. Tate (July 17): Specimens of the western army cutworm (Chorizagrotis auxiliaris Grote) were received from Custer and Franklin Counties on June 27 and July 10, respectively.
- Colorado. Miriam A. Palmer (July 9): C. auxiliaris and related forms have practically stopped flying into light trap.
- Utah. G. F. Knowlton, et al. (July 16): Variegated cutworms (Peridroma margaritosa Haw.) are seriously injuring alfalfa over a large portion of Gunnison Valley, in Sanpete County. (July 18): Seriously held back alfalfa on numerous farms throughout the Uinta Basin. Large proportion of larvae have matured and begun to pupate, but injury is still considerable in many fields. (July 21): Attacking approximately 5,000 acres of alfalfa in Duchesne, Uintah, Emery, Beaver, Sanpete, and Carbon Counties. Many are pupating in Carbon and Emery Counties.

H. F. Thornley (July 19): Adults of C. auxiliaris collected in trap light at Logan.

FALL ARMYWORM (Laphygma frugiperda A. & S.)

- Georgia. T. L. Bissell (July 21): Appeared in late corn in Spalding County.
- Florida. J. R. Watson (July 22): Reported on grass over some parts of the State.
- Mississippi. C. Lyle, et al. (July 24): Light infestations were noted in Lee and Monroe Counties and the Meridian area, with very heavy infestations in Oktibbeha County. At State College about 80 percent of the young corn on the college farm is infested.
- Venezuela. C. H. Ballou (June 30): On June 20 a heavy infestation was observed at Caracas. Abundant on Para and Bermuda grass at all places visited, from an altitude of about 400 to about 1,200 meters. Bermuda and Para grass have suffered most, and corn, sorghum, sunflower, potato, and Amaranthus are attacked. Damage to corn and potatoes has been heavy especially in fields in which Bermuda and Para grass were present. Guinea grass has also suffered considerably.

BEET ARMYWORM (Laphygma exigua Hbn.)

- Texas. L. W. Noble (July 5): Previously reported infestations have about disappeared in Presidio, Presidio County.
- California. J. Wilcox (July 1): At Garden Grove a field of young sweet corn about 6 inches high was very heavily infested.

S. Lockwood (July 9): Responsible for severe damage to 500 acres of sugar beets in Glenn and Butte Counties, and some loss has occurred in Colusa and Yolo Counties.

WEBWORMS (Loxostege spp.)

South Dakota. H. C. Severin and G. I. Gilbertson (June 28): L. sticticalis is causing much trouble in the Black Hills section and in other isolated areas of the State.

Utah. G. F. Knowlton and L. Manwaring (July): On July 15 L. sticticalis adults were reported as seriously damaging alfalfa and gardens in localities in the southern part of Rich County; eggs are abundant and beginning to hatch in a beet field at Benson and at Smithfield. On July 19 moths were abundant in some northern localities and in foothills 6 miles north of Vernal.

Wyoming. B. T. Snipes (July): Infestations of L. sticticalis in June were the heaviest ever known to occur in the Big Horn Basin area. Some beetfields were completely destroyed and damage occurred on beans, peas, alfalfa, radishes, and general garden crops.

Texas. L. W. Noble (July 5): Infestations of garden webworm (L. similalis Guen.) previously reported, have about disappeared.

R. K. Fletcher (July 23): L. similalis was present on alfalfa and causing extensive injury in Ellis County on July 10.

WHITE-LINED SPHINX (Sphinx lineata F.)

Wyoming. B. T. Snipes (July 22): Large numbers reported from Evanston, Uinta County, but observed feeding only on dock. (Det. by C. Heinrich)

Utah. F. C. Harmston and G. F. Knowlton (June 25): Heavy infestation of larvae present on range land in Duchesne County. Larvae also present along roadsides, often 1 to 3 per square yard, defoliating various range plants.

TARNISHED PLANT BUG (Lygus pratensis oblineatus Say)

Massachusetts. A. I. Bourne (July 23): Reported as causing a blight to blossoms of dahlias, peonies, and similar plants, by feeding on blossom stems. Usually attack the stem just beneath the bud and cause the collapse of the flowering stem at that point. Similar injury, noted each year, takes place in potato fields. During middle and late June, injury to the fruiting stems of raspberries was noted, and, at least in one instance in Hampden County, which is the southernmost county in the Connecticut Valley area, there was rather extensive injury in strawberry plantings.

Michigan. R. Hutson (July 23): Injury very noticeable on potatoes in the vicinity of Houghton.

South Dakota. H. C. Severin and G. I. Gilbertson (June 28): Occurring in

outbreak numbers in Black Hills area and causing damage to gardens and rye.

Nebraska. H. D. Tate (July 17): Found on heads of rye in Dawson County on June 18.

California. S. Lockwood (July 9): Tarnished plant bug, probably this species, occurred in huge numbers in potato fields near Edison in Kern County.

STINKBUGS (Chlorochroa spp.)

North Dakota. J. A. Munro (July 25): On July 9 and 10 green grain bug (C. uhleri Stal) was observed in fewer numbers than last year in Bowman, Dickinson, New England, and Mandan areas.

Utah. C. J. Sorenson (July 21): Injury of a pentatomid bug, probably C. sayi Stal or C. uhleri, was reported as serious on wheat in Trout Creek in western Juab County, the second damaging infestation in that locality during the last 10 or 12 years. Some injury to grains reported from Millard County.

G. F. Knowlton (July): C. sayi appeared in large numbers and caused moderate to severe injury to ripening barley and wheat at Fillmore and Meadow on June 22, and was moderately abundant in maturing wheat in a field near Centerville in July.

CEREAL AND FORAGE - CROP INSECTS

WHEAT AND OTHER SMALL GRAINS

HESSIAN FLY (Phytogphaga destructor Say)

Ohio. T. H. Parks (July 24): Infestation has increased greatly over last year, and is general over the State. Infestation is not heavy enough generally to reduce the wheat yield nor the quality of the wheat, but a few fields in northwestern Ohio suffered yield reduction.

Minnesota. A. G. Ruggles and assistants (July): Scarce on winter wheat at Cambridge, in Isanti County, and in Stearns, Benton, and Sherburne Counties, in the vicinity of Saint Cloud.

North Dakota. F. G. Butcher (July 24): Infestation causing 15 to 20 percent injury to wheat was observed recently near Tokio, in Benson County. Less extensive injuries have been observed in various localities throughout the eastern part of the State.

Nebraska. H. D. Tate (July 17): Heavy infestations and serious damage to wheat occurred in southeastern Nebraska. In a considerable number of fields from 75 to 95 percent of the plants were infested and from 25 to 40 percent plant infestation was not at all uncommon.

Kansas. H. R. Bryson (June 26): First time for many years that wheat has been badly infested. Considerable loss has resulted in eastern and southeastern Kansas.

WHEAT STEM MAGGOT (Meromyza americana Fitch)

Minnesota. A. G. Ruggles and assistants (July): Moderately abundant in Saint Louis County.

Nebraska. H. D. Tate (July 17): Infested barley plants were received from York County on June 24. Reported as injuring wheat in Polk County on June 25.

WHEAT JOINTWORM (Harmolita tritici Fitch)

Ohio and Indiana. C. Benton, et al. (July 25): Annual survey just completed shows a rather heavy infestation in wheat in several counties in west-central Ohio and in east-central Indiana. Infestation has persisted in this general area for several years.

WHEAT HEAD ARMYWORM (Neleucania albilinea Hbn.)

Nebraska. D. B. Whelan (July 17): Specimens were taken from a field of oats mixed with wheat, in Seward County, on June 17.

APHIDS (Aphididae)

South Dakota. H. C. Severin and G. I. Gilbertson (July 2): Head of Thatcher wheat infested with Macrosiphum granarium Kby. submitted with statement that they are abundant in Brown County. (Det. by P. W. Mason.)

Utah. G. F. Knowlton (June 26): M. granarium is moderately infesting wheat fields in Utah County. (July 11): Light infestation of aphids of wheat heads of spring plantings at North Ogden and Fielding. (July 11): Light infestation of M. granarium on wheat at Paradise and Hyrum, and light infestation of Rhopalosiphum prunifoliae Fitch, on oats at Logan.

CORN

CHINCH BUGS (Blissus leucopterus Say)

Ohio. T. H. Parks (July 24): No serious damage has occurred in any location.

Indiana. J. J. Davis (July 23): Only isolated infestations of importance in a few western counties, with Benton County as the center, owing to weather unfavorable for bugs.

C. Benton (July 25): Migrations started from small grains to corn about July 1 and were completed by July 15. Threatening outbreak was reduced to light or moderate proportions, owing to timely rains in May and June in west-central Indiana, mostly confined to Benton and adjacent counties. In many cases grass in wheat stubble held the nymphs until they were mature. Most of the second brood are maturing.

Illinois. W. P. Flint (July 22): Owing to rainfall, there was considerable reduction in numbers but there are enough adults present in scattered cornfields to build up a heavy second-brood infestation.

Michigan. R. Hutson (July 23): Outbreaks have been reported from Niles and Monroe.

Iowa. C. J. Drake (July 12): Large numbers found in parts of Crawford, Monona, and Woodbury Counties, in the western part of the State. A considerable amount of grass in the small grain will hold light to moderately heavy infestations in many fields until the alate stage is attained.

Missouri. P. C. Stone (July 28): Heavy infestations were scattered, and very little damage to corn was reported during the month. By July 15 there were still a few third-, many fourth-, and still more fifth-instar and adult bugs at Atlanta, in north-central Missouri, in yellow foxtail which had sprung up in the wheatfields. Abundance of yellow foxtail and field bulrush in and about grainfields prevented in many instances, a general migration of the nymphs, and not until July 20 to 23, in central Missouri, was there a large distribution by flight to corn. First observation of second-generation nymphs on corn was made on July 11 at Macon, north-central Missouri.

Nebraska. H. D. Tate (July 17): Infestation has been greatly reduced, largely as a result of unfavorable weather.

Kansas. H. R. Bryson (July 24): General flight of adults in the eastern part of the State from about July 4 to 10. During this period they became numerous in cornfields and on small sorghum plants. Following the flight, adults laid eggs at bases of young sorghum plants and corn replanted on flooded bottom land.

CORN EARWORM (Heliothis armigera Hbn.)

New York. N. Y. State Coll. Agr. News Letter (July 14): In eastern New York there was some injury in the first early corn, now being harvested. (July 21): In western New York, infested corn is now being harvested in Erie and Tompkins Counties. Larvae are half grown and are present in destructive numbers.

Pennsylvania. G. B. Sleesman (July 15): Sweet corn on the market in Philadelphia shows heavy damage.

Virginia. L. A. Hetrick (July 23): Larvae are injuring corn at West Point.

H. G. Walker and L. D. Anderson (July 25): Unusually abundant on sweet corn at Norfolk.

Ohio. T. H. Parks (July 24): Caused serious injury to early maturing sweet corn, which was marketed the second and third weeks in July. Corn on the market at present is not seriously infested.

Georgia. T. L. Bissell (June 26): Adults are feeding on leaves of corn at Experiment.

- Mississippi. C. Lyle, et al. (July 24): Damage to corn was reported from the southwestern counties, the Meridian and Durant districts, and the northeastern counties.
- Missouri. H. E. Brown (July 28): Sweet corn which was in silk from May 5 to July 10 was quite heavily attacked, but corn silking after the latter date seems unusually free from damage. Eggs are very scarce on silks at present, indicating low moth activity.
- Louisiana. C. O. Eddy (July 24): Especially abundant in corn throughout almost the entire State.
- Nebraska. H. D. Tate (July 17): Larvae, from one-third to one-half mature, were collected on or in bean pods, and reported as damaging sweet corn in Lancaster County on June 28.
- Kansas. H. R. Bryson (June 26): Abundant in first market sweet corn. Reported present in considerable numbers in pods of green beans in Butler County. (July 24): Caused considerable injury to early sweet corn. Later plantings have escaped serious injury.
- Oklahoma. F. A. Fenton (July 23): Infestation in one of the major sweet corn producing sections of the State, near Bixby, is the heaviest it has been in years, 100-percent infestation being recorded.
- Montana. H. B. Mills (July 26): Very injurious in the Bitter Root Valley to early plantings of sweet corn, some of them nearly 100-percent infested. Also injurious to tomatoes.
- Utah. G. F. Knowlton (July): Caused considerable damage to early sweet corn and tassels in northern Utah.
- California. J. Wilcox (July 17): An untreated row through a field of sweet corn in Garden Grove was 100-percent infested. Treated corn in same field was 84-percent free of infestation.

EUROPEAN CORN BORER (*Pyrausta nubilalis* Hbn.)

- New York. N. Y. State Coll. Agr. News Letter (July 7): Increased rapidly in eastern New York during week of June 30, in Rockland County, and were observed causing severe injury to vines in a potato field in Ulster County. First borer pupa observed on potato on July 3. Infestation in early corn is extremely severe. (July 14): In western New York, in Monroe County, the borer is more abundant than usual. Eggs are numerous and quite a sprinkling of entrances can be found. (July 21): In Niagara County, the borer is beginning to break over the stalks in some fields where infestation is heavy.
- Pennsylvania. T. L. Guyton (June 20): Larvae reported as destroying field corn plants at Green Lane, Montgomery County.
- G. B. Sleesman (July 1): First pupae observed today. Severe damage to early sweet corn reported in the Philadelphia area.

Maryland. E. N. Cory (July 17): Second brood began to emerge today at College Park. Reported on zinnia at Pocomoke.

Virginia. H. G. Walker and L. D. Anderson (July 25): Infestation is very much lighter in Princess Anne County than last year.

Indiana. J. J. Davis (July 23): Seriously damaged sweet corn as far west as La Fayette where moths have been very common at lights. First larvae pupated on July 2 and first moths of second generation appeared on July 19. Average of about two borers per plant were observed in a field.

Illinois. W. P. Flint (July 22): Considerable increase present in northeastern and east-central areas of the State. Specimens rather easily found in northeastern fourth of State where a careful search was required previously to locate even scattered specimens.

Michigan. R. Hutson (July 23): Very few adults observed in cornfields at East Lansing on July 13. Rather large numbers found infesting one potato field near Blissfield.

STALK BORER (Papaipema nebris nitela Guen.)

Minnesota. M. W. Wing (July): Found in corn in Anoka, Redwood, and Yellow Medicine Counties, and in Spring Valley, Fillmore County, New Prague, in Le Sueur and Scott Counties, and at Morris, in Stevens County. Moderately abundant.

ARMYWORM (Girphis unipuncta Haw.)

New York. N. Y. State Coll. Agr. News Letter (July): Reported as present in eastern New York, in Westchester County and on Long Island, on corn and grass the latter part of June and early part of July. Considerable damage occurred on several farms in western New York during month of June.

Virginia. H. G. Walker and L. D. Anderson (July 25): Heavy infestations were observed in two fields of grassy corn about the middle of July. Ground beetle larvae, Calosoma sp., were very abundant and eating many of the larvae and pupae.

Colorado. Miriam A. Palmer (July 9): Moth was taken for first time in light trap at Fort Collins on June 17.

SOUTHERN CORNSTALK BORER (Diatraea crambidoides Grote)

Virginia. L. A. Hetrick (July 23): Injury is noticeable in cornfields in the eastern part of the State.

CORN ROOTWORMS (Diabrotica spp.)

Indiana. J. J. Davis (July 23): D. longicornis Say has been very destructive in some cornfields at La Fayette. On July 22 the larvae had left the roots and mature larvae and pupae were found in the soil. Adults were feeding on corn silks and in some instances had eaten off all of the silk.

Illinois. W. P. Flint (July 22): First-generation adults of the southern corn rootworm (D. duodecimpunctata F.) appeared in large numbers in cornfields on July 17. Appeared in the southern part of the State as early as July 7. Adults of D. longicornis were appearing in large numbers than usual on July 21 at Urbana. Some were seen in St. Clair County on July 14.

Tennessee. G. M. Bentley (July 14): Northern melon beetle (D. longicornis) is feeding on the silk of corn in several fields in Obion County.

FLEA BEETLES (Halticinae)

Iowa. C. J. Drake (June 21): Corn is about 1 foot high and flea beetles are extremely abundant and doing a lot of damage near Spencer, in Clay County, in western Iowa. (H. S. Barber states that they are either a species of Colaspis or Rhabdopterus.) Larvae of a beetle, Colaspis has destroyed a few thousand acres of corn in Tama, Benton, Linn, Iowa, Johnson, and Black Hawk Counties, in eastern Iowa.

Nebraska. H. D. Tate (July 17): Striped flea beetles (Systema tenebriosa) were reported destroying young corn just as it came up in Dodge County on June 21.

CLAY-COLORED BILLBUG (Calendra aequalis Gyll.)

Indiana. H. R. Painter (July 25): Found doing considerable damage to a cornfield on low ground, on June 4. Moderate growth of sedge throughout the field was also being attacked.

SILK BEETLES (Luperodes spp.)

Louisiana. C. O. Eddy (July 24): Abundant in north-central Louisiana since June 10. Small numbers of adults are already parasitized by the fly Amedoria luctuosa Meig.

NITIDULIDS (Carpophilus spp.)

Illinois. C. L. Metcalf (July 19): C. niger Say was injurious to sweet corn in Livingston County, eating the developing kernels at the tips of ears in mid-July.

Missouri. L. Haseman (July 28): Two or more species of sap beetles have been extremely abundant and injurious to the tips of roasting ears in central Missouri and in other parts of the State since early in July. They were still abundant on July 26, working especially in the tips of ears damaged by birds and by earworms.

SUGARCANE BEETLE (Euethiola rugiceps Lec.)

Alabama. J. M. Robinson (June 16): Found on corn roots at Russellville today.

APHIDS (Aphididae)

- Ohio. T. H. Parks (July 24): Colonies of corn leaf aphid (Aphis maidis Fitch) have been noticed for the last 10 days.
- Missouri. L. Haseman (July 28): Some complaints of aphids on corn tassels.
- North Dakota. J. A. Munro (July 25): Corn aphid is moderately abundant in vicinity of Fargo.
- Kansas. H. R. Bryson (July 24): A. maidis has been becoming more abundant in corn during the last 10 days.
- Utah. G. F. Knowlton (July 18): Corn root aphid (Amuraphis maidi-radicis Forbes) and associated tan ant are infesting corn roots in a field at Roosevelt.

ALFALFA

ALFALFA WEEVIL (Hypera postica Gyll.)

Correction.--Ohio. T. H. Parks (July 17): The weevil thought to be the alfalfa weevil collected in Gallia County, in May, and published in the June issue of the Insect Pest Survey Bulletin, page 161, has been determined by L. L. Buchanan as Hypera meleus F.

Wyoming. B. T. Snipes (July 22): First crop of alfalfa in vicinities of Greybull and Basin in Big Horn County, and Meeteetse in Park County, suffered varied damage—from 5 to 75 percent. Both adults and larvae are present.

Utah. G. F. Knowlton (June 21): Injury has been severe in the Milford-Minersville area, 90 percent being in the pupal stage. (July 7): Injurious to alfalfa in some fields at Delta and Hyde Park, and generally severe in Millard, Sanpete, Sevier, Piute, and Emery Counties. Moderately severe in Utah County, Ouray Valley of Uintah County, Iron County, and parts of Cache County. (July 18): Damaged alfalfa at Roosevelt, Vernal, and Maeser, and injury was reported as rather general throughout Duchesne and Uintah Counties.

CLOVER LEAF WEEVIL (Hypera punctata F.)

Georgia. T. L. Bissell (July 11): Adults are commonly caught in soil-erosion run-off tanks, apparently coming from alfalfa.

Utah. G. F. Knowlton (June 19): Adults found in alfalfa at Vernal. Moderately abundant. (July 7): Adults are abundant in an alfalfa field near Hyde Park.

ALFALFA CATERPILLAR (Colias eurytheme Bdv.)

Utah. G. F. Knowlton (July): Adults were abundant near Hyde Park and around and over several alfalfa fields at Cove, Smithfield, and Hyde Park, in Cache County, during the first half of July, and moderately

abundant in flight over alfalfa fields at Vernal around July 18.

THREE-CORNERED ALFALFA HOPPER (Stictocophala festina Say)

Mississippi. C. Lyle (July 24): Nymphs were received from Hinds County on June 23, where they were feeding on alfalfa.

PLANT BUGS (Lygus spp.)

Nebraska. H. D. Tate (July 17): Specimens of L. elisus Van D. were found on potato plants in Dawson County on June 16.

Utah. C. J. Sorenson (July 20): Many fields in Cache Valley have grayish appearance because of blasted buds from feeding of L. elisus and L. elisus hesperus Knight.

G. F. Knowlton (July 7): L. elisus hesperus and L. elisus were extremely abundant in alfalfa fields southeast of Hyde Park, on July 7, moderately abundant on potatoes generally in fields of certified stock at Ogden Valley and Morgan Valley on July 11, and abundant on alfalfa at Roosevelt and Myton on July 20.

COWPEA

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

Georgia. T. L. Bissell (July 9): Caused very little damage to cowpeas at Tifton, southern Georgia, and larvae are hard to find. Plants have been bearing 2 to 3 weeks. (July 12): Very active today at Woolsey, central Georgia, and there are many stung pods. Peas have been bearing a week. (July 21): Great many grubs are emerging from peas picked at Woolsey.

Correction:—In the June issue of the Insect Pest Survey Bulletin, on page 16 a note by T. L. Bissell on Callosobruchus maculatus F. should have been under C. aeneus.

COWPEA WEEVIL (Callosobruchus maculatus F.)

Florida. J. R. Watson (June 28): Observed injuring beans in some localities.

VETCH

CLOVER ROOT CURCULIO (Sitona hispidula F.)

Oregon. D. C. Mote (July 3): Caused rather severe damage to a few fields of vetch which were examined south of Monroe. Numerous adults were obtained in the field and hay-wagon beds on July 3. (Det. by L. P. Rockwood.)

SUGARCANE

SUGARCANE BORER (Diatraea saccharalis F.)

Louisiana. A. L. Dugas (July 24): Both first- and second-generation borer appeared about 10 days later than usual. Infestation is somewhat

more general than it has been the past few years, but heavy infestations are found only in localized areas. Parasitization is very high in areas where borer eggs are numerous.

FRUIT INSECTS

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Mississippi. J. Milton (July 24): Reported as injuring many peach trees in Hinds County and a smaller number in Claiborne County.

Utah. G. F. Knowlton and D. Nichols (June 28): Small fruit trees have been attacked in several localities in Davis County.

PEAR SLUG (Caliroa cerasi L.)

Rhode Island. B. Eddy (July 15): More abundant than usual in Washington County.

Massachusetts. E. P. Felt (July 24): Some injury to foliage of plum at Cambridge.

Utah. G. F. Knowlton and F. C. Harmston (July): Moderate to severe injury to cherry foliage was taking place in orchards at Ogden and north Ogden on June 27. On July 11 pear and cherry foliage was being damaged at Farmington.

WHITE PEACH SCALE (Aulacaspis pentagona Targ.)

Virginia. L. A. Hetrick (July 18): Ornamental flowering cherry trees seriously infested at Williamsburg. Crawlers had settled down.

H. G. Walker and L. D. Anderson (July 25): Very abundant at Norfolk on privet, peach, mulberry, and other plants.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Ohio. E. W. Mendenhall (July 22): Found on apple and peach stock in Washington County. Parasites have been active.

Mississippi. J. Milton (July 24): Damage noted on untreated trees in the Jackson area.

A MEALYBUG (Phenacoccus aceris Sign.)

Maine. H. B. Peirson (July 18): Abundant at Fayette on June 4, when eggs were being laid.

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

New York. D. W. Hamilton (July 30): Spring-brood moths ceased to appear in bait traps at Poughkeepsie on July 11. Number of new larval

injuries to fruits was comparatively low for the weeks ended July 1 and 19. A distinct increase in the number of new injuries occurred during the week ended July 26, indicating that second-brood larvae were beginning to enter the fruit. Increases in bait captures of first brood moths began on July 19. Activity is still at least 7 days in advance of that of a normal year.

Pennsylvania. H. M. Steiner (July 25): First-brood moth emergence from cages in Adams County, south-central Pennsylvania, began on July 11.

Delaware. L. A. Stearns (July 18): Infestation light throughout the State.

Virginia. A. M. Woodside (July 24): Infestation throughout Augusta County is somewhat lighter than in 1940. First-brood moths began flying early in July and flight is still heavy.

Ohio. T. H. Parks (July 24): Bait-pan catches indicated a marked rise in activity beginning on July 12 at Cincinnati, on July 14 at Columbus and on July 18 at Port Clinton. Serious in a few orchards.

Indiana. L. F. Steiner (July 3): Moth abundance in the Vincennes area, as estimated by weekly treatment of 10 trees, is today at its highest level for this brood. Larvae are hatching in considerable numbers.

Illinois. S. C. Chandler (July 17): Peak of hatch of second brood on apple in the vicinity of Carbondale, southern Illinois, is apparently being reached. Infestation generally more severe than in 1940.

W. P. Flint (July 22): First brood unusually heavy throughout the greater part of the orchard section of the State. Heavy rains in June tended to keep down infestation to some extent, and second brood has been slow in developing, but is now well under way.

Wisconsin. J. A. Callenbach (July 22): Larvae of the first brood began to leave apples about July 1. First adults of the summer brood were caught in bait pans in Crawford County on July 21. First-brood larval injury is very light, averaging less than 3 percent.

Minnesota. M. W. Wing (July): Scarce at Wheaton, Traverse County.

Missouri. L. Haseman (July 28): July brood is unusually abundant in southwestern and southeastern Missouri, where there has been a serious shortage of rainfall. In central and northeastern Missouri, where rains have been more plentiful, second-brood larvae are less abundant. In southwestern and southeastern Missouri moths in goodly numbers began emerging during the first days of July, emergence being light until July 9, when it increased markedly until July 20. Emergence in central and northeastern Missouri has been light, but more or less continuous since the first part of July.

Michigan. R. Hutson (July 23): Second-brood moths began emerging on July 1 and have appeared at Grand Rapids, Birmingham, Allegan, South Haven, Benton Harbor, Niles, and Lawton.

Washington. C. C. Alexander (July 21): First summer-brood moths emerged at Yakima on July 9.

Oregon. B. G. Thompson (July 21): First-brood damage has been extremely light in the Willamette Valley.

FRUIT TREE LEAF ROLLER (Cacoccia argyrospila Walk.)

Illinois. S. C. Chandler (July 17): About half as much injury caused to apples in Calhoun County as in 1940.

Wisconsin. J. A. Callenbach (July 22): Flight of adults increased approximately 50 percent over the 1940 flight. Two bait pans in an untreated orchard caught 4,935 moths. Damage is moderate.

EYE-SPOTTED BUDMOTH (Spilonota ocellana D. & S.)

New York. N. Y. State Coll. Agr. News Letter (July 21): Observations made in Wayne County, western New York, on July 18 showed that eggs were rather numerous on apple foliage in two orchards, one 4 miles from Lake Ontario and one 2 miles from the lake. Eggs and larvae were exceedingly scarce in all prune orchards examined--2 orchards about 2 miles and 1 about $4\frac{1}{2}$ miles from the lake.

PISTOL CASEBEARER (Coleophora malivorella Riley)

Pennsylvania. H. M. Steiner (July 25): Present on apple in Adams County, south-central Pennsylvania. Moth emergence complete on July 7. Weather conditions from June 20 to July 2 favored heavy oviposition. Hatching began on June 29 and was 50-percent complete on July 10, and 97 percent complete on July 22.

PEAR BORER (Conopia pyri Harr.)

Georgia. W. H. Clarke (July 2): Several adults reared from larvae removed from limbs of apple trees in an orchard at Cornelia during May. Damage was light. (Det. by J. F. G. Clarke.)

APPLE MAGGOT (Rhagoletis pomonella Walsh)

Maine. Maine Agr. Expt. Sta. (June): Emergence at Highmoor Farm began on June 16, which is 6 days earlier than any record in the last 10 years.

Connecticut. P. Garman (July 22): Flies are now appearing in abundance in many orchards.

New York. N. Y. State Coll. Agr. News Letter (July 14): An apparent peak of emergence occurred on July 11 in cages located near Poughkeepsie. Flies increased noticeably in Rockland County during the last week, but fruit is about the cleanest on record.

District of Columbia. B. A. Porter (July 11): Heavily infested apples were submitted on July 9 from a home orchard in northwestern Washington.

Michigan. R. Hutson (July 23): Adults were taken on June 28 at South Haven.

APPLE FLEA WEEVIL (Rhynchaenus pallicornis Say)

Indiana. L. F. Steiner (June 26): Abundant at Elberfeld, large catches of newly emerged adults being made in bait traps on June 21. There were as many as 200 in some traps. Considerable surface feeding on fruit done by the larvae, in addition to leaf puncturing and mining.

APPLE SEED CHALCID (Callimome druparum Boh.)

Massachusetts. A. I. Bourne (July 23): Apples showing considerable indication of damage were received on July 12 from points in Plymouth County, southeastern Massachusetts, and from orchards in Marshfield.

APHIDS (Aphididae)

Rhode Island. B. Eddy (July 17): The woolly apple aphid (Eriosoma lanigerum Hausm.) is rather scarce.

New York. N. Y. State Coll. Agr. News Letter (June 30): One serious infestation of rosy aphids (Anuraphis rosae Baker) noted in Niagara County, western New York, during the week. (July 7): E. lanigerum was observed to be quite abundant in one orchard in Niagara County. (July 14): In western New York green aphids (Aphis pomi Deg.) vary greatly in abundance in orchards in Wayne County, only a few having serious infestations, whereas in Orleans County they are serious in many orchards.

Michigan. R. Hutson (July 23): Green apple aphids observed at Belding, Grand Rapids, and Shelby.

North Carolina. C. F. Smith (July 25): Approximately 95 percent of 25,000 apple trees in a nursery at Greensboro are heavily infested with E. lanigerum; many of the trees are dying.

Utah. G. F. Knowlton (July 14): A. pomi is infesting foliage on young apple trees at Amalga.

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

Colorado. G. M. List (July 21): Taken in an orchard north of Fort Collins in June. This appears to be the first record on apple in Colorado, although it is very abundant on lilac.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Pennsylvania. H. M. Steiner (July 25): Observed on apple and peach in Adams County. Foliage bronzed by heavy attack in several orchards by mid-July.

Ohio. T. H. Parks (July 24): Infestations are increasing rapidly in some orchards, reaching outbreak proportions in a few.

Michigan. R. Hutson (July 23): Infestations on apple are common in the fruit-growing districts about South Haven, Galesburg, Homer, Benton Harbor, and East Lansing.

PEACH

PLUM CURCULIO (Conotrachelus nonuphar Hbst.)

Virginia. A. M. Woodside (July 24): First-brood adults began to appear in peach orchards in Albemarle County as early as July 2. A few are depositing eggs. Also present in Augusta and Rockingham Counties.

Georgia. O. I. Snapp (July 21): Early Hiley, Hiley, and other midseason varieties of peach were attacked by the second brood at Fort Valley, central Georgia. Midseason peaches usually escape this attack, but this year the crop is late and the insect developed rapidly. First mature eggs of the second generation found in a field-reared female on June 25, and first matured second-generation eggs found in insectary-reared females on July 1. Thirty-three percent of the new females had started to deposit second-generation eggs before Elberta peach harvest, and 52 percent had begun to deposit second-generation eggs by July 19, in the midst of Elberta harvest. Considerable damage caused to midseason and late varieties in the State.

Mississippi. C. Lyle, et al. (July 24): Injury to peaches heavy on untreated trees in practically all sections of the State. In some parts of Oktibbeha County, where trees failed to bear last year, injury has been light, even on untreated trees.

Illinois. S. C. Chandler (July 17): Infestations apparently very low on harvested peaches, indicating a clean crop of Elberta peaches at Carbondale.

W. P. Flint (July 22): Damage to peach very light throughout the southern Beach Belt.

Minnesota. A. G. Ruggles and assistants (July): Very abundant in Ramsey County in the vicinity of Saint Paul.

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Rhode Island. B. Eddy (July 10): Scarcer than usual, but present in scattered areas.

New York. N. Y. State Coll. Agr. News Letter (July 14): In western New York second-brood injury has begun in Seneca County, and larvae were found in an orchard in Orleans County, where parasites were released. (July 21): Second brood is well started in Dutchess County, eastern New York, some fruit being infested.

New Jersey. H. W. Allen (July): Second-brood infestation of twigs appeared distinctly lower than that of 1940 in peach orchards in southern New Jersey, despite recent heavy rainfall and luxuriant twig growth.

Illinois. S. G. Chandler (July 17): Very light infestation in tender terminals of peach at Carbondale, and scarcely any fruit infestation in southern Illinois.

W. P. Flint (July 22): Scarce throughout the commercial peach-growing region of the State.

Mississippi. C. Lyle, et al. (July 24): Injured peach twigs received from Bolivar County, and injury to twigs reported from the Durant district and the southwestern counties.

Louisiana. C. O. Eddy (July 24): More abundant and more widespread in Louisiana than during the last 6 years. It is becoming especially abundant in the parishes east of the Mississippi River, particularly near Baton Rouge and Bogalusa.

PEACH BORER (Conopia exitiosa Say)

Pennsylvania. H. M. Steiner (July 25): First adult emergence noted in Adams County on July 8.

Maryland. E. N. Cory (June 23): Apricots injured at Hagerstown.

Louisiana. C. O. Eddy (July 24): Very numerous on peach trees in northern Louisiana.

GREEN STINKBUG (Acrosternum hilare Say)

Ohio. T. H. Parks (July 24): Nymphs observed injuring peaches in an orchard in Franklin County on July 18.

COTTONY PEACH SCALE (Pulvinaria amygdali Gyll.)

New York. N. Y. State Coll. Agr. News Letter (July 7): Scales have hatched and are feeding on the undersides of leaves in Niagara County.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

New York. N. Y. State Coll. Agr. News Letter (July 21): In eastern New York damage was serious early in the month, but somewhat reduced later in July, owing to weather conditions. In the western part of the State infestations have been numerous and heavy.

Washington. J. F. Cooper (July 7): Specimens collected late in June at Coulee City, Grant County, and in the fruit district adjacent to Clarkston, Asotin County, early in July. (Det. by P. W. Oman.)

CHERRY

BLACK CHERRY APHID (Myzus cerasi F.)

Montana. H. B. Mills (July 15): More severe than in some time on sweet cherries in Lake County, causing much leaf curling.

Utah. G. F. Knowlton and F. C. Harmston (June 27): Moderately severe damage to foliage in an orchard at Uintah.

A CHERRY TENTMAKER (Cacoecia cerasivorana Fitch)

Vermont. H. L. Bailey (July 24): Extremely abundant at scattered points. Webs on roadside bushes in Whitingham, Windham County, in southern Vermont, have caused many reports.

PEACH TWIG BORER (Anarsia lineatella Zell.)

Utah. C. J. Sorenson and L. Cutler (July 21): Infestations found occasionally on cherry fruits at north Ogden.

CHERRY FRUITFLY (Rhagoletis cingulata Loew)

Oregon. S. C. Jones (July 21): Peak of emergence in the Willamette Valley was reached on June 13; still some emergence on July 18.

PLUM

PLUM GOUGER (Anthonomus scutellaris Lec.)

Mississippi. C. Lyle (July 24): Specimens received from Quitman County, where adults were emerging from ripening plums on July 17.

Missouri. L. Haseman (July 28): Light infestation in central Missouri, where adults began to emerge from plum seeds on July 20.

MEALY PLUM APHID (Hyalopterus arundinis F.)

Utah. G. F. Knowlton and F. C. Harmston (June 27): Severe infestation in a young plum orchard at Uintah, Weber County.

RASPBERRY

RASPBERRY CANE BORER (Oberca bimaculata Oliv.)

Pennsylvania. T. L. Guyton (July 1): Reported as causing considerable damage at Tobyhanna, Monroe County.

Indiana. J. J. Davis (July 23): Very common on red raspberry on June 30 at Logansport.

Michigan. R. Hutson (July 23): Reported from Birmingham, East Lansing, and Plymouth.

A SAWFLY (Priophorus rubivorus Roh.)

California. G. S. Kido (July 18): Moderate infestation in a commercial planting in San Jose; 75 percent of the larvae mature.

CURRENT

AN APHID (Aphis varians Patch)

Utah. G. F. Knowlton (July 12): Yellow-current foliage curled at Riverton on June 26. Now attacking black current at Willard and Farmington.

CURRENT FRUITFLY (Epochra canadensis Loew)

Utah. G. F. Knowlton (June 26): Maggots are infesting yellow and black currants at Riverton and Ogden. (July 1): Black currants infested at Taylorsville and Willard, from 2 to 7 percent on some fence-row bushes.

GRAPE

GRAPE LEAF FOLDER (Desmia funeralis Hbn.)

Missouri. L. Haseman (July 28): Less common than for the last couple of years in central Missouri, but about the middle of July some wild grapevines suddenly became heavily infested, 50 percent or more of the leaves being folded.

Oklahoma. F. A. Fenton (July 23): Reported from Wyandotte.

Texas. R. K. Fletcher (July 23): Present on grapes in Wise County on June 24.

GRAPE BERRY MOTH (Polychrosis viteana Clem.)

Michigan. R. Hutson (July 23): Peak of second-brood emergence occurred between July 1 and 4 in the Grape Belt at Lawton and Paw Paw.

GRAPE LEAFHOPPER (Erythroneura comes Say)

New York. N. Y. State Coll. Agr. News Letter (July 7): In Ulster County, eastern New York, the hatch is very abundant, but apparently not complete. (July 14): Adults are appearing steadily in Dutchess County. (July 21): Present in about the same numbers as a year ago in Niagara County. Comparatively few in some vineyards.

Mississippi. D. W. Grimes (July 24): Some injury by a grape leafhopper, Erythroneura sp., noted in the Durant area.

Missouri. L. Haseman (July 28): Since July 10 in central Missouri susceptible varieties of grapes show an increasing amount of injury. On July 24 numbers of adults were flying and late-instar nymphs were present.

Nebraska. H. D. Tate (July 17): Ivy leaves submitted from Platte County on July 2 were found to be damaged.

Utah. G. F. Knowlton (July 20): Injury is appearing on Virginia creeper in some places, but is less general than at this time in 1940.

GRAPE PHYLLOXERA (Phylloxera vitifoliae Fitch)

Nebraska. H. D. Tate (July 17): Leaves of a wild grapevine, received from Douglas County on July 10, were found to be badly disfigured by galls.

SIX-SPOTTED GRAPE BEETLE (Polidnota punctata L.)

Connecticut. E. P. Felt (July 24): Found in moderate numbers on grapevine at Stamford.

PECAN

PECAN NUT CASEBEARER (Acrobasis caryae Grote)

Texas. C. B. Nickels, et al. (June): More than 75 percent of the total nut crop has been destroyed at Crystal City. (July 17): Second-generation larvae caused severe damage at Crystal City to trees that had not been adequately treated against the first generation. Infestation light on adequately treated trees.

HICKORY SHUCK WORM (Laspeyresia caryana Fitch)

Texas. W. C. Pierce (July 2): Pecans collected in Comanche County were found to be 96-percent attacked.

Arkansas. C. B. Nickels, et al. (July 22): Most of a large sample of nuts collected at Foreman was found to be infested.

AN APHID (Monellia costalis Fitch)

Texas. W. C. Pierce (July 2): Abundant on pecan leaves in Brown and Comanche Counties.

FILBERT

FILBERT WORM (Melissopus latiferreanus Wism.)

Oregon. B. G. Thompson (July 22): Early emergence was light in the Willamette Valley. Considerable increase noted during the week ended July 19, when the weather was extremely hot.

CITRUS

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Florida. H. T. Fernald (June 21): Second-generation adults are appearing at Winter Park, Orange County, on orange, grapefruit, and gardenia.

M. D. Leonard (July 1): Adults are extremely abundant on new growth of a number of trees at Lake Jem; eggs are also abundant.

J. R. Watson (July 22): Summer brood is flying over most of the State.

Mississippi. N. D. Peets (July 24): Very abundant on privet hedges in the southwestern counties.

FLORIDA RED SCALE (Chrysomphalus aonidum L.)

Florida. M. D. Leonard (July 13): Infestation reported as heavy in some sections of Lake County.

M. R. Osburn (July 17): In the vicinity of Fort Pierce, on the lower east coast, infestations are not so heavy as they were at this time in 1940 when it was unusually heavy.

PURPLE SCALE (Lepidosaphes beckii Newm.)

Florida. M. D. Leonard (July 13): Reported as abundant in some sections of Lake County.

M. R. Osburn (July 17): Infestations in the vicinity of Fort Pierce are not so heavy as the unusually heavy ones of 1940.

J. R. Watson (July 22): Since heavy rains began in the middle of June, fungi parasitic on scale insects have rapidly increased, particularly the red-headed scale fungus on purple scale.

FLORIDA WAX SCALE (Ceroplastes floridensis Comst.)

Florida. M. D. Leonard (July 1): About 75 kumquat trees at Lake Jesu are from moderately to considerably infested. Summer brood crawlers have not appeared.

CITRUS RUST MITE (Phyllocoptes oleivorus Ashm.)

Florida. J. R. Watson (June 28): Heavy infestation at Gainesville during the last week in May and first week in June has been brought under control by heavy rains.

M. D. Leonard (July 6): Reported as very abundant in many groves in Orange County, necessitating control measures. (July 13): Reported as heavily infesting groves in some parts of Lake County. (July 27): Reported as quite active in some parts of Brevard County during the last week.

SIX-SPOTTED MITE (Tetranychus sexmaculatus Riley)

Florida. J. R. Watson (June 28): Heavy infestation of purple mite late in May and early in June has been brought under control by heavy rains.

A RUST MITE (Anychus clarki McG.)

Texas. E. F. Pepper (July 19): Not very prevalent in citrus groves in the vicinity of Weslaco, and damage has been light.

FIG

MEALYBUGS (Pseudococcinae)

Louisiana. C. O. Eddy (July 24): Mealybugs are numerous on figs.

SAPOTE

A PSYLLID (Ceropsylla sideroxyli Riley)

Florida. J. R. Watson (July 22): Severely injuring a tree at Boca Grande.

TRUCK - CROP INSECTS

BLISTER BEETLES (Meloidae)

- Virginia. L. A. Hetrick (July 28): Adults of Tetraonyx quadrimaculata F. feeding on foliage and blossoms of wild legumes in King and Queen County.
- Alabama. J. M. Robinson (June 21): Epicauta pennsylvanica Deg. was found on soybeans at Anniston today.
- Mississippi. C. Lyle, et al. (July 24): Specimens of E. ferruginea Say on beans were sent in from Rankin County on July 21. While not as numerous as in May and June, specimens of the southern striped blister beetle (E. lemniscata F.) have been received during the month from Calhoun, Choctaw, Chickasaw, Hinds, Lee, Meshoba, Noxubee, Oktibbeha, and Union Counties, where gardens, beans, and soybeans were being injured. Reported that they are still causing injury in the southeastern counties, the Meridian district, and the northeastern counties. Specimens of Macrobasis unicolor Kby. from soybeans were received from Choctaw County on June 24.
- Tennessee. G. M. Bentley (June 27): E. vittata F. reported as infesting a large number of gardens in Union City, Obion County.
- Ohio. T. H. Parks (June 28): Gray blister beetles (E. cinerea Forst.) are very abundant generally in alfalfa fields, where they are feeding on the plants.
- E. W. Mondenhall (July 18): E. pennsylvanica is abundant on asters, phlox, and gladiolus plants in nurseries at Zanesville.
- Missouri. L. Haseman (July 28): Complaints of blister beetles have been received throughout the month, with a few as late as July 20.
- South Dakota. H. C. Severin and G. Gilbertson (June 28): Blister beetles are beginning to make their appearance in injurious numbers in many sections of the State. In some areas they have already done some damage to garden crops.
- Nebraska. H. D. Tate (July 17): Specimens of E. lemniscata taken on tomatoes were submitted from Colfax County on July 7.
- D. B. Whelan (July 17): E. maculata Say was found to be common on Russian-thistle in Webster County on June 23. M. unicolor was collected on alfalfa in Dakota County on June 18.
- Kansas. H. R. Bryson (June 26): Reports of Epicauta spp. are gradually increasing in numbers. One report from Jewell County stated that they were causing injury to garden crops and some defoliation of newly planted raspberry plants.

Oklahoma. C. F. Stiles (July 26): E. vittata is reported as damaging the foliage of locust trees in Wagoner County.

Utah. G. F. Knowlton and F. C. Harnston (July 10): E. pennsylvanica is attacking alfalfa blossoms southwest of Eden in fields also infested with grasshoppers; also damaging potatoes and alfalfa blossoms west of Eden in Ogden Valley. E. maculata is abundant in the Blue Creek area, feeding on Atriplex argentea.

GRAPE COLASPIS (Colaspis brunnea F.)

Ohio. T. H. Parks (July 24): Specimens of beetles were sent in with rhubarb leaves, upon which they had been feeding extensively at Marietta, Washington County.

Missouri. E. E. Brown (July 28): Beetles very abundant during the first half of July, causing considerable foliage injury to garden plants, especially beans and four-o'clocks, in central Missouri. Reported causing serious damage to a strawberry planting in southwestern Missouri.

SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata F.)

Mississippi. M. L. Grimes (July 24): Damage to melons by adults was noted in the Meridian territory.

Minnesota. A. G. Ruggles and assistants (July): First appeared on squash in Ramsey County and is also injuring beans. Very abundant.

Kansas. H. R. Bryson (July 24): The twelve-spotted cucumber beetles are more abundant this summer than they were last year. First-generation adults are abundant in alfalfa fields and in melon and pumpkin blossoms.

FALSE CHINCH BUG (Nysius ericae Schill.)

Florida. J. R. Watson (July 22): Caused serious damage to a field of turnips in Winter Haven.

Arizona. W. A. Stevenson (June 23): Reported as numerous during past week, entering homes in such numbers as to become very annoying. Insects had bred on wild mustard.

South Dakota. H. C. Severin and G. Gilbertson (June 28): Continue to do considerable damage to gardens, potatoes, and bush fruits in the Black Hills area.

Utah. G. F. Knowlton and F. C. Harnston (July 1): False chinch bugs are causing severe damage to corn at Trout Creek and are attacking other crops. Movements from field margins to crops are heavy, often 200 to 500 per square foot being present on the margins. (July 19): Moderately abundant in alfalfa at Bridgeland, Duchesne County.

SOUTHERN GREEN STINKBUG (Nezara viridula L.)

Texas. R. K. Fletcher (July 16): Severe injury to cream peas, lima beans, and okra in Milan County. Injury to gardens and fruit has been serious and widespread.

GARDEN FLEA HOPPER (Halticus citri Ashm.)

Virginia. A. M. Woodside (July 9): Reported in most crops and weeds in a few gardens in Raphine, Rockbridge County, and Spottswood, Augusta County.

Texas. P. T. Rihard (July 23): Present on tomato at Weslaco, Hidalgo County, on June 28.

GARDEN SLUG (Agriolimax agrestis L.)

Colorado. Miriam A. Palmer (July 9): Very numerous in gardens and destructive to plants just coming up during May and June about Fort Collins.

GARDEN CENTIPEDE (Scutigera immaculata Newp.)

Utah. G. F. Knowlton (July 1): Injury to gardens and flowers at several places in the Bountiful-Centerville area in Davis County. (July 11): Regal lilies are being damaged in a garden at Logan.

Oregon. D. Bonnell (July 10): The number of centipedes on garden crops in the vicinity of Eugene in the Willamette Valley, is increasing slowly.

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

New York. N. Y. State Coll. Agr. News Letter (July 7): Infestation and damage caused in eastern New York is severe. (July 21): In Dutchess County, potato bugs are present in usual numbers in practically all plantings and in all stages. Also very destructive on eggplant.

Minnesota. A. G. Ruggles and assistants (July): Reported as very abundant from scattered localities over much of the State.

Missouri. L. Haseman (July 28): Second brood of Colorado potato beetles in breeding experiments began to emerge from the soil during the early part of July and their larvae were maturing and going into the ground on July 26.

South Dakota. N. P. Larson (July 21): For the first time in about 12 years beetles are causing considerable injury to potatoes in the western part of the State.

Wyoming. B. T. Snipes (July 22): Populations and damage are from light to moderate in potato fields in the Big Horn Basin area.

Colorado. G. M. List (July 21): Very limited in numbers in northern part of the State.

Washington. E. J. Newcomer (July 21): The Colorado potato beetle is very common in the city of Yakima.

POTATO FLEA BEETLES (Epitrix spp.)

Connecticut. N. Turner (June 23): Damage by E. cucumeris Harr. on potatoes and tomatoes is continuing and the infestation at Mount Carmel is very heavy.

Minnesota. A. G. Ruggles and assistants (July): E. cucumeris is very numerous, especially in the Faribault area and in the Red River Valley around Crookston. Several species of flea beetles are commonly present.

North Dakota. J. A. Munro (July 25): Moderately abundant in the vicinity of Grand Forks.

Nebraska. H. D. Tate (July 17): E. cucumeris is present in destructive numbers in the western part of the State.

Colorado. G. M. List (July 21): E. cucumeris did rather serious damage to early plants during the month of June.

Utah. G. S. Stains and G. F. Knowlton (July 11): E. cucumeris was much more abundant on potatoes than E. suberinata Lec. in Morgan Valley, Ogden Valley, and the Plain City-northern Ogden areas, injury being most severe in Morgan valley fields, whereas, Systema tenebriosa Say constituted approximately 10 percent of the population in potato fields in the same area, being most abundant near Huntsville, Eden, and Liberty.

Washington. E. W. Jones (July 3): The ratio of E. cucumeris to E. suberinata in 100 sweeps of an insect net was 75 to 19 on potato vines near Stanwood, Snohomish County, on June 16. Foliage injury was noticeable but no damage was seen on the tubers.

APHIDS (Aphididae)

Maine. Maine Agr. Expt. Sta. (June): Buckthorn aphids (Aphis rharni Fonsc.) were first found on potatoes on June 10 in central Aroostook County. Record is the earliest in 10 years. Easily found in many fields by June 25.

Connecticut. R. L. Beard (July 21): Macrosiphum solanifolii Ashm. was generally abundant on tomatoes and in some fields was unusually severe, causing considerable damage in New Haven County. Potatoes were infested to a less extent.

New York. N. Y. State Coll. Agr. News Letter (July 14): M. solanifolii is causing much damage in Nassau County. Infestation is not general

throughout the county, some areas being worse than others. (July 21): In western New York aphids have been seen in moderate numbers on potatoes in Genesee County, and are present in most Wayne County fields. Very prevalent on tomatoes in Niagara County on June 30.

Ohio. T. H. Parks (July 24): M. solanifolii has seriously damaged a well-sprayed field of potatoes in Lake County, in the northeastern part of the State.

Colorado. M. A. Palmer (July 9): Green peach aphid (Myzus persicae Sulz.) found abundant on tomatoes and potatoes about Fort Collins.

G. M. List (July 21): M. persicae unusually abundant during the latter part of June and the early part of July in northern Colorado, on tomatoes, potatoes, and cabbage. Infestation has largely disappeared during the last 10 days.

Utah. G. F. Knowlton, et al. (June 30): M. persicae is moderately abundant on potato plants at Farmington. (July 11): M. persicae was abundant on potatoes in the Morgan area and moderately abundant on potatoes in the Huntsville, Eden, Liberty, Ogden, Plain City, Echo, and Devils Slide areas. (July 12): Only an occasional specimen of M. convolvuli Kltb. was encountered on potato and tomato plants examined in northern Utah. (July 16): Moderate infestation of M. persicae on sugar beets in northern Utah.

POTATO LEAFHOPPER (Empoasca fabae Harr.)

New York. N. Y. State Coll. Agr. News Letter (July 14): On Long Island leafhoppers are in evidence at Riverhead where little or no hopperburn has developed in most potato fields; however, in Nassau County they are present in large numbers in some fields, much hopperburn being observed in one field.

Pennsylvania. B. F. Coon (July 11): Very abundant on potatoes at Lancaster. Blight becoming very apparent, following a week of wet, cold weather.

Tennessee. G. M. Bentley (July 22): Present in untreated areas.

Minnesota. A. G. Ruggles and assistants (July): Moderately abundant in Mahanomen and Ramsey Counties, and very abundant in Faribault County.

North Dakota. J. A. Munro (July 25): Moderately abundant at Grand Forks.

Nebraska. H. D. Tate (July 17): Comparatively heavy populations are present and injury is noticeable in eastern Nebraska.

Utah. G. S. Stains and G. F. Knowlton (July 11): E. filamenta De L. moderately abundant, causing white spotting of the foliage, in the Morgan, Ogden Valley, and Plain City areas.

POTATO PSYLLID (Paratrioza cockerelli Sulc)

Nebraska. H. D. Tate (July 17): Population has remained at a threatening level in western Nebraska during July and in some instances damage to early potatoes is evident.

Colorado. G. M. List (July 21): Occurs in about average abundance. Psyllid yellows are showing on both tomatoes and potatoes in untreated plantings.

Utah. G. F. Knowlton (June 26): Scarce on potatoes examined in Weber County, in the northern part of the State. (July 7): Yellows injury in a few potato fields reported from Saint George, and Santa Clara, in Washington County, in the southwestern part of the State, and from Vernal, in Uintah County, in the eastern part of the State. (July 10): Some infestation at Beaver, in the western part of the State.

HORNWORMS (Protoparce spp.)

Delaware. L. A. Stearns (July 16): Tomato hornworm reported as very abundant since July 2, as many as 14 per plant in extreme cases, and doing considerable damage to tomatoes at Canterbury, Rising Sun, and Magnolia.

Virginia. H. G. Walker and L. D. Anderson (July 25): Rather abundant in several fields of tomatoes on the Eastern Shore during the early part of July.

Mississippi. L. J. Goodgame (July 24): Tomato hornworms were abundant 2 or 3 weeks ago, but none could be found on July 21.

Louisiana. A. L. Dugas (July 24): Tomato hornworms are doing considerable damage to tomatoes, eggplant, and sweet peppers in the southern part of the State.

Nebraska. H. D. Tate (July 17): Sphinx moth was submitted from Richardson County on June 24.

Kansas. H. R. Bryson (July 24): Tomato hornworms reported causing injury to tomato plants at Manhattan, Eldorado, and Fort Scott.

Utah. G. F. Knowlton (June 30): Severe infestation of tomato hornworm in a potato field at Callao, 224 larvae being picked from the patch in 1 hour.

California. J. Wilcox (July 14): About 10 percent of the tomato plants in a field at Garden Grove were infested or damaged. This is an early record.

CORN EARWORM (Holiothis armigera Hbn.)

Virginia. L. A. Hetrick (July 23): Larvae are injuring tomatoes at West Point.

Mississippi. C. Lytle, et al. (July 24): Tomatoes were reported as being injured in Hinds County and around Meridian.

Louisiana. C. O. Eddy (July 24): Damage on tomatoes has been below average in most localities.

California. J. Wilcox (July 16): Field of early tomatoes harvested at Fullerton during June and the first half of July averaged 6-percent damage.

BEANS

MEXICAN BEAN BEETLE (Epilachna varivestis Muls.)

Maine. J. H. Hawkins (July 21): Damage by overwintered beetles on beans more extensive generally than ever before. Larvae now in next-to-last instar and all intermediate stages.

A. E. Brower (June 30): Beetles appearing in gardens around Augusta. (July 20): Infestations reported as developing in large plantings.

Connecticut. N. Turner (June 23): Eggs hatching on garden beans.

New York. N. Y. State Coll. Agr. News Letter (July 21): The infestation on Long Island by the first brood is regarded as lightest for many seasons. Beetles are present in Rockland and Dutchess Counties, but not particularly destructive. In Steuben County, western New York, pupae were found first on July 14 in a field of beans planted May 24. Overwintered adults are still prevalent and some eggs are still being laid. Larvae have inflicted commercial injury to large plantings of field beans in the Atlanta-Cohocton area. In Wayne and Orleans Counties the beetles have not been unusually numerous, but in the southern part of Genesee County they are showing up in large numbers in some fields.

Virginia. A. M. Woodside (July 24): Damage to beans in the vicinity of Staunton, Augusta County, is lighter than usual. First-brood adults are appearing.

H. G. Walker and L. D. Anderson (July 25): Many late fields of beans at Norfolk were heavily infested during the early part of July.

Mississippi. C. Lytle, et al. (July 24): Specimens received from Neshoba and Winston Counties. Reported as injuring beans in Choctaw, Leake, and Oktibbeha Counties and causing severe damage in the Meridian area and in the northeastern counties, where beans have been completely stripped in some places.

- Louisiana. C. O. Eddy (July 24): Less numerous than usual in and around Bogalusa, in the eastern part of the State.
- Tennessee. G. M. Bentley (July 22): Occurring in destructive numbers only in spots in the State.
- Michigan. R. Hutson (July 23): Reported from Dearborn, Kalamazoo, and Monroe.
- Nebraska. H. D. Tate (July 17): Specimens submitted from Kimball County on July 12.
- Colorado. G. M. List (July 21): Appeared in unusual numbers in the Fort Collins area; beans seriously injured by the adults in several cases; larval injury just beginning to show.

CUCUMBER BEETLES (Diabrotica spp.)

- Louisiana. C. O. Eddy (July 24): Banded diabrotica beetles, D. balteata Lec., are becoming rather numerous for the first time since the severe winter of 1939-40.
- California. L. G. Jones (June 16): Western 12-spotted cucumber beetle (D. soror Lec.) is very abundant generally on cultivated crops in the Sacramento Valley, particularly on early string beans. In several beanfields examined the beetles averaged more than 2 per plant, and the damage was more than 50 percent.

PALE-STRIPED FLEA BEETLE (Systema blanda Melsh.)

- New York. N. Y. State Coll. Agr. News Letter (June 30): Caused considerable injury to beans in Monroe County during the last 2 weeks.

BEAN LEAF BEETLE (Corotoma trifurcata Forst.)

- Mississippi. C. Lyle and assistants (July 24): Specimens were received from Rankin County on June 21, where beans were being injured. Reported as injuring beans in the Durant district.

A WEEVIL (Hypera moles F.)

- Maine. J. H. Hawkins (July 21): Weevils which came from clover hay stored in a barn located in a bean field at Vassalboro have recently caused considerable injury to beans. H. moles is the most abundant, but H. nigrirostris F. and Sitona hispidulus F. are also present. (Det. by L. L. Buchanan.)

BEAN THRIPS (Hemiothrips fasciatus Perg.)

- Utah. F. C. Harnston and G. F. Knowlton (July 1): Destroyed 30 percent of the beans in some fields at Beaver. Home garden beans are being seriously injured generally at Beaver, Milford, and Minersville.

A MIRID (Neurocolpus nubilis Say)

Mississippi. C. Lyle, et al. (July 24): Specimens taken from beans were received from Rankin County on June 21.

RED SPIDERS (Tetranychus spp.)

California. J. Wilcox (July 5): Web-spinning mite caused severe damage in a 10-acre field of market lima beans now being harvested at Fullerton.

J. C. Elmore (July 16): Red spider mite very numerous on leaves of lima beans at San Juan Capistrano, in the southern part of the State. In some instances the vines were killed.

PEAS

PEA APHID (Macrosiphum pisi Kltb.)

Maine. J. H. Hawkins (July 21): Scarce throughout most of the pea-growing sections. Infestations on clover did not migrate to peas as usual.

Utah. G. F. Knowlton, et al. (July 11): Averaged about 175 per semicircular sweep on peas and 12 on alfalfa in Morgan Valley; also approximately 125 per semicircular sweep on peas in Ogden Valley.

PEA WEEVIL (Bruchus pisorum L.)

Colorado. G. M. List (July 21): Abundant in some garden areas around Fort Collins. In 1 planting 1 variety of peas showed as many as 11 eggs per pod. From 4 to 6 adults were taken per each 10 sweeps of the net. Not numerous in canning peas.

PEA MOTH (Laspeyresia nigricana Steph.)

Michigan. R. Hutson (July 23): Adults and small larvae were taken on July 18 at Rudyard.

THRIPS (Thysanoptera)

Utah. G. F. Knowlton, et al. (June 27): Thrips, Sericothrips moultoni Jones, Odontothrips loti Hal., and Frankliniella moultoni Hood, are seriously injuring peas at Nephi, Salem, and Payson. (Det. by S. F. Bailey.)

CABBAGE

IMPORTED CABBAGE WORM (Pieris rapae L.)

New York. N. Y. State Coll. Agr. News Letter (July 21): In western New York, larvae, which became quite numerous on early set cabbage, are disappearing and butterflies are again laying eggs in Wayne County. In

Niagara County worms are showing up on cabbage in destructive numbers. In Genesee County the infestation on cabbage is general, while in Orleans County the worms are few, although they are starting to hatch. Butterflies and eggs are scarce. Several pupae of the early brood were found to be parasitized.

Missouri. L. Haseman (July 28): Extremely abundant during July and unprotected cabbage and related crops have been seriously damaged throughout central Missouri.

Nebraska. H. D. Tate (July 17): Reported as present in Kearney County on July 7.

Minnesota. A. G. Ruggles and assistants (July): Very abundant in Sherburne and Wadena Counties.

Utah. G. F. Knowlton (July 7): Adults abundant at Hyde Park and east of Smithfield. (July 15): Adults abundant at Logan, Smithfield and Cove, with damage to cabbage occurring at Cove.

CABBAGE MAGGOT (Hylemya brassicae Bouche)

Maine. Maine Agr. Expt. Sta. (June): Found on radishes and cabbages. Reported from Franklin, Penobscot, Androscoggin, Knox, and Lincoln Counties.

Utah. F. C. Harnston and G. F. Knowlton (July 17): Causing extensive damage to turnips, radishes, and cabbage in the Beaver area.

HARLEQUIN BUG (Murgantia histrionica Hahn)

Virginia. H. G. Walker and L. D. Anderson (July 25): Rather scarce in the Norfolk area.

Florida. J. R. Watson (July 22): Quite injurious to collards in most parts of the State.

Mississippi. C. Lyle, et al. (July 24): Specimens received from Copiah and Neshoba Counties, and reports of injury from Attala, Lafayette, Lee, Monroe, Panola, Tate, and Tishomingo Counties, in the northern half of the State, and from the Meridian area.

Oklahoma. F. A. Fenton (July 23): Recorded at Webbers Falls, in east-central Oklahoma, for the first time in many years.

Texas. J. N. Roney (June 22): Present on cabbage, turnip, and mustard at Waco, McLennan County.

SQUASH

SQUASH BUG (Anasa tristis Deg.)

Maine. J. H. Hawkins (July 21): Especially destructive to squash along coast in market-gardening sections of York and Cumberland Counties, in southern and central Maine.

Maine Agr. Expt. Sta. (June): Present in Penobscot County and very abundant in Oxford County.

New York. N. Y. State Coll. Agr. News Letter (July): In eastern New York eggs are being laid and nymphs are beginning to hatch. In western New York, squash bugs are numerous and eggs, some of which have started to hatch, can readily be found.

Pennsylvania. B. F. Coon (July 11): Only moderately abundant and causing light injury to squash at Lancaster.

Ohio. T. E. Parks (July 24): Reported as unusually numerous.

Indiana. J. J. Davis (July 23): Reported as causing damage during the middle of the month in several localities in the northern half of the State.

Michigan. R. Hutson (July 23): Reported from Cassopolis, Kalamazoo, Muir, Lowell, Flushing, and Detroit.

Mississippi. C. Lytle, et al. (July 24): Caused heavy damage to summer squash and melons in the Meridian area; also some damage in Attala and Leake Counties.

Kansas. H. R. Bryson (June 25): Abundant and nymphs are beginning to injure squash and pumpkin vines.

Utah. G. F. Knowlton, et al. (July): Caused severe injury to squash plants during the first half of the month at Minersville and Milford, in Beaver County; Morgan, in Morgan County; and at Logan, in Cache County.

APHIDS (Aphididae)

Utah. G. F. Knowlton (July 18): Very heavy infestation of root aphids has completely destroyed half of a 2-acre squash field, and parts of 6 acres more have dead and stunted plants.

SQUASH BORER (Melittia satyriniformis Hbn.)

New York. N. Y. State Coll. Agr. News Letter (July 14): Present on squash in usual numbers in various counties in eastern and western New York.

Virginia. H. G. Walker and L. D. Anderson (July 25): Very abundant and killing most of the squash plants in the Norfolk area.

Mississippi. C. Lyle (July 24): Larvae from squash vines were received from Lowndes County on June 28.

Louisiana. C. O. Eddy (July 24): Squash vine borers are abundant.

Indiana. J. J. Davis (July 23): Reported as destructive at Fulton on June 24.

Missouri. P. C. Stone (July 28): Serious injury noted on July 9 on vines of early planted Hubbard squash at Columbia, where every plant in a home garden was heavily infested.

Kansas. H. R. Bryson (July 24): Melittia satyriniformis has been more injurious this year than last. The injury to squashes and pumpkins at Manhattan has been accentuated by the prevalence of dry weather during the last 3 weeks.

PICKLEWORM (Diaphania nitidalis Stoll)

South Carolina. O. L. Cartwright (June 27): First larvae of season, about half grown, found in squash at Clemson.

CUCUMBERS

STRIPED CUCUMBER BEETLE (Diabrotica vittata F.)

Maine. J. H. Hawkins (July 21): Infestation is general on cucumbers and squash.

Connecticut. R. L. Beard (July 21): More abundant on squash at New Haven than in recent years.

Mississippi. D. W. Grimes (July 24): Some injury to cucumbers noted in the Durant area.

Minnesota. A. G. Ruggles and assistants (July): Very abundant in McLeod and Meeker Counties, in the south-central section of the State.

South Dakota. H. C. Severin and G. Gilbertson (June 28): Causing considerable damage to cucumbers, squash, and pumpkins over the entire State.

Kansas. H. R. Bryson (June 25): Causing considerable injury to late squash, cucumbers, and melons in the vicinity of Manhattan.

PICKLEWORM (Diaphania nitidalis Stoll)

Mississippi. L. J. Goodgame (July 24): Causing damage to cucumbers in Monroe County.

MELON APHID (Aphis gossypii Glov.)

Kansas. H. R. Bryson (July 24): Melons and cucumbers have been seriously injured by A. gossypii during the last 2 weeks wherever control measures

have not been applied. Reports of injury have been received from Manhattan, Junction City, and Saint George.

ASPARAGUS

ASPARAGUS BEETLES (Crioceris spp.)

Maine. A. E. Brower (July 20): C. duodecimpunctata L. common on garden plantings in Augusta.

New York. N. Y. State Coll. Agr. News Letter (July 14): Larvae of C. asparagi L. nearly mature in Lewis County, western New York.

Utah. G. F. Knowlton (July 8): C. asparagi L. damaging some maturing asparagus at Logan and northwest of Ogden.

HOPS

HOP APHID (Phorodon humuli Schr.)

Oregon. H. E. Morrison (July 15): Unusual hot spell in the Willamette Valley, with temperatures reaching over 100° F. for a 4-day period, was responsible for excellent control of this insect, which was unusually numerous.

COMMON RED SPIDER (Tetranychus telarius L.)

Oregon. H. E. Morrison (July 8): Only one hop yard in the vicinity of Corvallis, in the Willamette Valley, showed any evidence of hop red spider.

CARROT

CARROT RUST FLY (Psila rosae F.)

New York. N. Y. State Coll. Agr. News Letter (July 14): Severe infestation in celery was seen on a muck farm in Cayuga County, western New York. Very little injury was seen in a nearby block of carrots on the same farm.

Oregon. R. L. Post (May): Reared from carrot roots sent in from Tillamook in May. (Det. by D. G. Hall.)

ONIONS

ONION THRIPS (Thrips tabaci Lind.)

New York. N. Y. State Coll. Agr. News Letter (July 21): Severe damage is occurring in spots in Wayne County, western New York. Condition has grown steadily worse during the last 2 or 3 weeks, but recent rains have reduced the seriousness of large populations.

Michigan. R. Hutson (July 23): Beginning to appear in onion fields in the vicinity of Stockbridge, Grand Ledge, and Hooper.

Oklahoma. F. A. Fenton (July 23): Very heavy infestation was recorded in onion-growing district near Eufaula, where it caused extensive damage.

ONION MAGGOT (Hylemya antiqua Meig.)

Utah. G. F. Knowlton (July 18): More than 70 percent of the onions in a home garden at Heber have been killed.

SWEETPOTATO

TORTOISE BEETLES (Cassidinae)

Georgia. T. L. Bissell (May 29): Metritona bivittata Say, M. bicolor F., and Chirida guttata Oliv., are abundant on sweetpotatoes.

Mississippi. C. Lytle, et al. (July 24): Reported damaging sweetpotato plants in Chickasaw and Monroe Counties and in the Meridian area. Specimens of M. bivittata were received from Union County on June 25, and on June 20 specimens of Chelymorpha cassidea F. were received from Amite County. Reported as causing some damage to sweetpotatoes in the State College district.

SWEETPOTATO SAWFLY (Sterictiphora cellularis Say)

Mississippi. C. Lytle (July 24): On June 27 adults and larvae were received from Jackson County, where the larvae were feeding on sweetpotato leaves.

STRAWBERRY

STRAWBERRY WEEVILS (Brachyrhinus spp.)

Rhode Island. B. Eddy (July 22): General infestation of the black vine weevil (B. sulcatus F.).

Indiana. J. J. Davis (July 23): Strawberry crown girdler (B. ovatus L.) was reported from South Bend and Elkhart as annoying in homes during the middle of the month.

G. F. Knowlton (July 2): B. ovatus and B. rugosostriatus Goeze are damaging strawberries at Providence, and numerous fields at Logan, Farmington, and throughout Utah County.

STRAWBERRY LEAF ROLLER (Ancylis comptana Froel.)

Utah. G. F. Knowlton (June 27): Seriously damaged strawberry foliage at Payson, and some fields on Provo Bench.

PEPPER

PEPPER WEEVIL (Anthonomus eugenii Cano)

California. J. C. Elmore (June 27): Very abundant in early pepper fields, with one field near Stanton, Orange County, practically 100 percent infested. Blossom buds in three other fields were seriously attacked. (July 16): Very numerous in San Diego, Orange, Los Angeles, and Ventura Counties, and in extreme cases total loss of early crops has resulted.

A GELECHIID (Gnorimoschema gudmannella Wlsm.)

Puerto Rico. W. W. Chapman (July 18): Larvae found infesting 32.8 percent of the buds of hot and sweet peppers during a field inspection on May 9. Two separate fields, 5 miles apart, were inspected on this date, and in the first field of sweet peppers 70 buds were examined and 23 of them were found to be infested. In the second field of hot peppers 76 buds were examined and 25 were found to be infested.

BEETS

BEAN APHID (Aphis rumicis L.)

Michigan. R. Hutson (July 23): Infestation of an aphid, tentatively identified as A. rumicis, has been affecting fields of sugar beets in the Saginaw Valley near Saginaw, where infestation was general, with some variations in the field. Also found on sugar beet at East Lansing.

FLEA BEETLES (Disonycha spp.)

Virginia. L. A. Hetrick (July 26): D. xanthomelaena Dalm. has caused extensive injury to red beets at West Point.

South Dakota. M. F. Larson (July 21): D. triangularis Say is the most serious pest of sugar beets in the irrigated section of western part of the State. First time noticeable damage has been recorded.

Nebraska. H. D. Tate (July 17): Specimens of the spinach flea beetle (D. xanthomelaena) were submitted from Platte County on July 10.

BEET LEAFHOPPER (Eutettix tenellus Dak.)

Utah. F. C. Harnston and G. F. Knowlton (July 2): Rather abundant in home-garden beet fields, and moderate to severe curly-top injury is occurring in the Beaver area.

A PENTATOMID (Thyanta rugulosa Say)

Nebraska. H. D. Tate (July 17): Specimens were submitted on June 30 with report that they were destructive to beets in Hayes County.

TOBACCO

POTATO TUBER WORM (Gnorimoschema operculella Zell.)

Florida. F. S. Chamberlin (July 15): Splitworms were observed slightly infesting a tobacco field in Gadsden County.

TOBACCO BUDWORM (Heliothis virescens F.)

Pennsylvania. B. F. Coon (July 19): One mature larva found on tobacco today at Lancaster.

Florida. F. S. Chamberlin (July 5): Very abundant on upper leaves of maturing shade-grown tobacco crop in Gadsden County.

TOBACCO FLEA BEETLE (Epitrix parvula F.)

Florida. F. S. Chamberlin (July 5): Unusually abundant in shade-grown tobacco in Gadsden County.

TOBACCO THRIPS (Frankliniella fusca Hinds)

Florida. F. S. Chamberlin (July 3): More abundant and have caused more injury on shade-grown tobacco than in the past several years in Gadsden County. Infestation checked by heavy rains late in June.

C O T T O N I N S E C T S

BOLL WEEVIL (Anthonomus grandis Boh.)

South Carolina. F. F. Bondy, et al. (July 26): Numbers continue to increase and general migration is under way in the Coastal Plains area. Migration began on July 15, about 2 weeks earlier than the earliest migration usually occurs. Practically all squares of cotton in most fields in the immediate vicinity of Florence, Florence County, were punctured by July 15. Infestation in all fields examined in Florence County was practically 100 percent, but not so high in Chesterfield and Dillon Counties.

Georgia. P. M. Gilmer, et al. (July 12): Injury has increased considerably during the last week in the area of Tift, Berrien, and Turner Counties; numbers of adults also increasing. Fully half squares examined showed pupae at the end of the week, most of the rest in fallen squares being well-advanced larvae. The first brood is out, and the second is emerging in some numbers. In most sections damage is becoming very serious in untreated fields of upland cotton. Infestation in Turner County is reported as approaching an average of 50 percent in such fields, some showing an infestation of as high as 80 percent.

Florida. C. S. Rude, et al. (July 19): Infestation has advanced sharply in untreated fields, owing to favorable weather conditions. Infestation in 44 fields examined in Lake, Gilchrist, Marion, and Alachua Counties ranged from 0 to 58.4 percent, averaging 6.15 percent.

Tennessee. G. M. Bentley (July 26): Not found in Tennessee this season.

Alabama. J. M. Robinson (July 22): Infestation in Autauga County on July 18 ranged from 2 to 30 percent; in Lee County, today, from 4 to 65 percent.

Mississippi. C. Lyle, et al. (July 24): More requests for information on control than in the last 10 years combined. Heavy infestations reported from the southern two-thirds of the State; fairly heavy infestations in most of the rest of the State.

R. L. McGarr (July 19): Infestation in the vicinity of State College in 1,800 squares examined in 4 fields ranged from 27.8 to 57.2 percent, averaging 47.0 percent, as compared to an average of 18.3 percent in these plots last week.

Louisiana. R. C. Gaines, et al. (July 12): In field-plot control tests in Madison Parish squares examined during the last week showed an average infestation of 19.1 percent in untreated plots, ranging from 3.0 to 40.0 percent. Many weevils which had just emerged were found.

Oklahoma. F. A. Fenton (July 23): Worst infestation in many years is developing in the south-central, southeastern, and eastern parts of the State. Early in June there was a square infestation of 40 percent in some fields in Webbers Falls, Muskogee County, east-central Oklahoma, and there are fields in which infestation is 80 percent or more. Weather conditions are very unfavorable for the weevil outside the most heavily infested areas.

C. F. Stiles (July 26): Worse throughout southeastern Oklahoma than for 10 or 12 years. Some infestations have reached 60 percent. First adults of 1941 are emerging, and infestation seems to be increasing throughout this area.

Texas. F. L. Thomas (July 9): A new generation is becoming active.

K. P. Ewing, et al. (July 12): In 8,500 squares inspected in 21 river-bottom fields in McLennan and Falls Counties punctures averaged 26.6 percent, ranging from 9.0 to 66.0 percent. In 17 prairie fields in these counties 7,775 squares inspected showed an average of 21.3 percent of punctures, ranging from 5.0 to 54.0 percent. Infestation is not as high in young as in old cotton.

E. F. Pepper (July 19): Heavy rains in June and rank growth of cotton in the Weslaco district built up a large population. Little

fruit set in untreated fields. Damage amounts to about 25 percent.

W. C. Maxwell (July 21): Infestation general throughout Kleberg and Nueces Counties, severe damage having occurred in many fields.

A SCARABAEID (Pachystethus marginatus F.)

South Carolina. F. F. Bondy, et al. (July 19): Specimens received with the report that this insect is causing severe injury to cotton near Conway, Horry County. (Det. by O. L. Cartwright.)

A CURCULIONID (Compsus auricephalus Say)

Louisiana. I. J. Becnel (July 24): Collected in several cottonfields in the vicinity of Shreveport.

COTTON LEAF WORM (Alabama argillacea Hbn.)

Florida. C. S. Rude, et al. (July 12): Observed last week in a field near McIntosh, Marion County. Eggs and half-grown larvae found. A few adults observed. (July 19): Found in several fields in Marion and Alachua Counties.

Mississippi. R. P. Colner (July 28): Reported for the first time in Mississippi on July 23 from Rome, Sunflower County; first one found in Mississippi in 1940 was on August 17.

Louisiana. C. O. Eddy (July 24): Reported during the last few days from a number of rather widespread locations throughout central and southern Louisiana.

Texas. F. L. Thomas (July 23): Generally distributed in small numbers in cottonfields throughout southern and south-central Texas, judging from the larvae found in most fields examined in Brazos and Burleson Counties. Broods are apparently overlapping, as many moths are reported as having been observed last week in the coastal bend area.

C. R. Parencia, et al. (July 5): A few scattered larvae were found during the last week in Calhoun County, none of them young.

A. V. Smith (July 20): In the Brownsville area, in some fields where all leaves have been stripped, there is damage as high as 75 percent; general average of damage is 10 percent.

W. C. Maxwell (July 21): Now general throughout Kleberg and Nueces Counties, but no great amount of damage, owing to slow increase of infestation. Larvae and moths are now appearing in greater numbers.

BOLLWORM (Heliothis armigera Hbn.)

South Carolina. F. F. Bondy, et al. (July 26): Injury observed in several fields in Florence County during the last week, but in no instance

was infestation severe.

Georgia. P. M. Gilmer, et al. (July 12): Injury to cotton is insignificant in Tift, Berrien, and Turner Counties.

Florida. C. S. Rude, et al. (July 19): Damage found in a few fields in the Sea-island Cotton Belt.

Alabama. J. M. Robinson (July 22): First-generation larvae reported on July 1, causing flaring of young squares.

Oklahoma. C. F. Stiles (July 26): Light infestation in Coal County; larvae feeding on small squares.

Texas. F. L. Thomas (July 23): Reports of damage received from the southern third of the State.

C. R. Parencia, et al. (July 5): A few larvae were found in cotton in Calhoun County during the last week, and several eggs observed on cotton planted in May.

L. W. Noble (July 5): Noted in small numbers during the last week in the area of Presidio, Presidio County.

W. C. Maxwell (July 21): Severe damage done to squares and bolls in some cottonfields in the western part of Nueces County, less severe damage having been observed in other sections of the county.

Arizona. W. A. Stevenson (July 12): An occasional bollworm is taken in sweeping cotton in Pima County.

COTTON SQUARE DORER (Strymon melinus Hbn.)

Oklahoma. C. F. Stiles (July 26): Very light infestation, about 0.5 to 1.0 percent, in a few fields.

Texas. W. C. Maxwell (July 21): Larvae and adults present in many fields in Nueces County, but damage is very light.

APHIDS (Aphididae)

South Carolina. F. F. Bondy, et al. (July 19): Leaf aphids greatly increased in numbers during the last week in Florence County. Treated cotton is showing a rapid increase in numbers, but not enough to be considered serious.

Georgia. P. M. Gilmer, et al. (July 12): Aphids are increasing slowly on cotton in Tift, Berrien, and Turner Counties. No heavy infestations, but easily found in almost all fields. Plants from Grady, Thomas, and Turner Counties showed that in some fields heavy infestations

had developed, but also that parasites and predators are abundant.

T. L. Bissell (June 26): Aphis gossypii Glov. is heavily infesting cotton at Douglasville, west of Atlanta, and plants are considerably stunted. Parasites and predators are active.

Florida. C. S. Rude, et al. (July 19): Aphids are numerous in many fields.

Mississippi. C. Lyle, et al. (July 24): Light infestations of A. gossypii noted in a few fields in the Meridian and Durant districts, and a heavy infestation reported from Hinds County.

E. W. Dunnan, et al. (July 12): Population is low in untreated cotton in Washington County, but in treated plots is increasing somewhat. In treated and untreated plots 3,200 square inches of leaves examined showed 1,541 aphids present.

Louisiana. I. J. Becnel (July 24): Populations of A. gossypii are increasing in the vicinity of Baton Rouge.

R. C. Gaines, et al. (July 19): Aphids are becoming more numerous in all fields in Madison Parish, especially in treated fields.

Texas. W. C. Maxwell (July 21): Present in many cottonfields, but not over extensive areas. Predators are very common.

Arizona. W. A. Stevenson (July 12): Aphids are beginning to appear in spots on cotton in the Marana section of Pima County. Although the infestation is still incipient, the occasional plants found infested look very sickly. Parasites are beginning to appear.

COTTON FLEA HOPPER (Psallus seriatus Reut.)

Mississippi. D. W. Grimes (July 24): Light injury to cotton found in Sharkey and Sunflower Counties.

Louisiana. I. J. Becnel (July 24): Infestations very low on cotton in the vicinity of Shreveport. Infestations on croton have increased considerably.

Oklahoma. C. F. Stiles (July 26): Some fields throughout the State are damaged, but not so seriously as in 1940.

Texas. F. L. Thomas (July 16): Populations are decreasing in most areas of eastern and central Texas. Unverified reports of damage in west-central Texas continue to be received.

K. P. Ewing, et al. (July 19): In McLennan and Falls Counties 5,600 terminals inspected in 5 fields showed an average of 5.3 adults and 7.9 nymphs, a total of 13.2 flea hoppers per 100 terminals.

C. R. Parencia, et al. (July 19): During the last week a total of 1,200 terminals was inspected in 4 fields in Calhoun County. An

average of 3.7 adults and 19.7 nymphs was found per 100 terminals, as compared with an average of 11.69 adults and 26.77 nymphs during the previous week.

W. C. Maxwell (July 21): Severe infestation was present in Kleberg and Nueces Counties late in May and during June, fruiting of cotton being greatly retarded. Infestation has decreased considerably and is now centered mostly on the younger cotton.

F O R E S T A N D S H A D E - T R E E I N S E C T S

FALL WEBWORMS (Hyphantria spp.)

Massachusetts. A. I. Bourne (July 23): Small webs of the fall webworm were beginning to appear by the middle of the month.

Rhode Island. D. Eddy (July 15): Fall webworm infestation is heavy.

Tennessee. G. M. Bentley (June 26): Fall webworm rather predominant in the counties in central and western Tennessee, feeding on walnut, persimmon, oak, maple, elm, wild cherry, and sycamore. Very few in the 33 counties of eastern Tennessee.

Mississippi. C. Lyle, et al. (July 24): Light damage by the fall webworm to pecan and other trees reported from the northeastern and northwestern counties, and the Durant and Jackson districts. Colonies that started on fruit and forest trees near State College have apparently been checked by natural enemies. Infestation not nearly so heavy as in 1940.

Nebraska. D. B. Whelan (July 17): Webworms were noted on boxelder trees in Douglas and Sarpy Counties on June 19.

H. D. Tate. (July 17): Fall webworm attacking mulberry and apple in Cass County. Specimens submitted on June 25.

Texas. W. C. Maxwell (July 21): Considerable damage by fall webworm to shade trees in Nueces County, many trees being practically defoliated. Mulberry, ash, elm, and pecan seem to be preferred in the order named.

BROWN-TAIL MOTH (Nygmia phaeorrhoea Donov.)

Maine. A. E. Brower (July 10): A few moths have been caught since July 6 at a light at Augusta.

H. B. Peirson (July 18): Found in southern Maine in May, when very severe outbreaks occurred. Feeding started unusually early in York County on April 21.

GYPSY MOTH (Porthetria dispar L.)

Maine. H. B. Poirson (July 18): Considerable decrease in infestation in southern Maine in many places, owing to nonhatch of eggs considered to have been winter killed. Defoliation very severe in many other places.

Massachusetts. A. I. Bourne (July 23): Reports of larvae of Calosoma spp. attacking gypsy moth larvae in a few instances.

Rhode Island. B. Eddy (July 20): Medium infestation generally over the State.

FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.)

Maine. A. E. Brower (June 28): First moths seen at light at Augusta. Flight in this area has been light.

Massachusetts. W. W. Bancroft (May 27): Considerable feeding on maple, birch, and oak noticed on the Taconic Range, in the vicinities of Hancock-Pittsfield and Lenox.

Pennsylvania. A. F. Burgess (June 28): Serious infestation, which has persisted for several years in Wayne County, has gradually spread westward into bordering towns in Lackawanna County. Heavy feeding has resulted and, in a few instances, complete defoliation in several spots in Madison Township.

Colorado. G. M. List (July 21): More numerous than for a number of years on shade trees in Fort Collins. Definitely on the increase.

SADDLED PROMINENT (Heterocampa guttivitta Walk.)

New Hampshire. V. Jensen (July 26): Defoliation of beech near Bartlett.

Vermont. H. L. Bailey (July 24): Half-grown larvae abundant on July 15 on sugar maple and beech on Herrick Mountain, in the vicinity of Ira, Rutland County, western Vermont. Defoliation not conspicuous, but feeding is rapidly progressing. Many adults of Calosoma frigidum F. observed.

R. C. Brown (July 26): Heavy feeding in beech and maple forests in the vicinity of Marlboro.

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

Pennsylvania. G. B. Slesman (July 15): Rather scarce in nurseries but quite abundant on private properties on various evergreens and deciduous trees at Philadelphia. Eggs have hatched during the last week, and some damage has been observed.

Virginia. H. G. Walker and L. D. Anderson (July 25): Reported as very abundant on arborvitae and several other plants at Hampton, and at several places in the Norfolk area.

Ohio. E. W. Mendenhall (July 23): Moderately abundant on arborvitae and other evergreens in nurseries in southern Ohio.

T. H. Parks (July 24): Serious injury to arborvitae during the last 3 weeks in some ornamental plantings in Columbus.

Mississippi. C. Lyle, et al. (July 24): Specimens received from Copiah and Oktibbeha Counties; reports of injury to arborvitae received from the Durant and Jackson districts.

Kansas. H. R. Bryson (July 24): Bagworms reported attacking junipers at Independence.

Texas. R. K. Fletcher (July 23): Observed from July 1 to 12 in Comal, Eastland, Harris, and Williamson Counties.

A TORTRICID (Zeiraphera ratzeburgiana Ratz.)

Maine. A. E. Brower (July 5): Moths have been flying at Bar Harbor.

SATIN MOTH (Stilpnotia salicis L.)

Rhode Island. B. Eddy (July 23): Extremely scarce this season.

A GALL APHID (Chermes tsugae Annand)

Oregon. R. L. Post (May): Common on Tsuga heterophylla in places along the coast. (Det. by P. W. Mason.)

ALDER

WOOLLY ALDER APHID (Prociphilus tessellatus Fitch)

New York. R. E. Horsey (July): Fairly abundant on imperial alder on July 9 and on Oregon alder in an ornamental planting at Rochester.

BEECH

BEECH SCALE (Cryptococcus fagi Baer.)

Maine. H. B. Peirson (July 18): Found in abundance as far north as Moro Plantation, in Aroostook County, accompanied by the disease Nectria sp. Extensive killing of trees in Washington, Hancock, and Penobscot Counties.

BIRCH

BRONZED BIRCH BORER (Agrilus anxius Gory)

Maine. H. B. Peirson (July 18): Found in June in Washington, northern Penobscot, and in southern Aroostook Counties. Considerable killing of trees, especially yellow birch. Adults still in pupal chambers on June 17 at Ashland, Aroostook County.

Ohio. E. W. Mendenhall (July 31): Birches at Saint Clairsville are dying rapidly, owing to injury.

Indiana. J. J. Davis (July 23): Reported as heavily infesting birches on July 14 at Carmel.

BIRCH LEAF MINER (Fenusa pusilla Lep.)

Maine. H. B. Peirson (July 18): Abundant in June on gray and ornamental birches in the southern half of Maine. Second generation well advanced at Augusta on July 16.

A SAWFLY (Phyllotoma nenorata Fall.)

Maine. H. B. Peirson (July 18): Mines began to appear at Bar Harbor on July 17.

BIRCH SKELETONIZER (Bucculatrix canadensisella Chamb.)

Rhode Island. B. Eddy (July 18): Infestation heavy throughout the State.

A CASEBEARER (Coleophora salmani Heinr.)

Maine. H. B. Peirson (July 18): Infestation heavy during June and July along the more eastern half of the coast and on coastal islands.

A SCALE (Xylococcus betulae Perg.)

Maine. H. B. Peirson (July 18): Very abundant on white birch at Bar Harbor.

CATALPA

CATALPA SPHINX (Ceratomia catalpae Ddv.)

Virginia. H. G. Walker and L. D. Anderson (July 25): Some catalpa trees at Norfolk are heavily infested.

Ohio. E. W. Mendenhall (July 19): Infestation serious in Muskingum and Washington Counties.

CATALPA MIDGE (Cecidomyia catalpae Const.)

Connecticut. E. P. Felt (July 24): Injury rather common on a tree at Norwalk.

GRAPE MEALYBUG (Pseudococcus maritimus Ehrh.)

Washington. F. W. Carlson (June 5): Although exceedingly numerous and very troublesome in past years at Yakima, it is fairly scarce this season. Scales are full grown and beginning to deposit eggs. (Det. by E. Morrison.)

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

Maine. H. P. Peirson (July 18): On May 2 and 8 at Gardiner, beetles began to become active in buildings where they had hibernated, leaving for nearby trees. Considerable feeding.

Vermont. H. L. Bailey (July 24): Extremely abundant in Burlington, Chittenden County, and moderately so in other thickly settled towns in range of infestation. Peak of feeding at Burlington was past on July 17. Great numbers of full-grown larvae, pupae, and some emerging adults were found about tree trunks on the same date.

Massachusetts. A. I. Bourne (July 23): Reported as present in all sections of the State. Damage in western Massachusetts apparently not so serious as in 1940.

J. V. Schaffner, Jr. (July 26): Infestations very noticeable in many localities early in July. Severe infestations are generally more or less local, and foliage is badly browned and dropping from trees.

Rhode Island. D. Eddy (July 11): Exceedingly heavy infestation throughout the State.

Connecticut. P. Wallace (July 15): Many elms completely defoliated, especially near buildings. Many larvae are pupating, and adults are beginning to emerge. Damage severe throughout the State.

New York. R. E. Horsey (July): Very numerous on elms at Rochester.

N. Y. State Coll. Agr. News Letter (July 14): First-brood damage is extremely serious and worse than usual in Dutchess County, eastern New York. (July 21): Beetles are entering second brood in Dutchess County; no egg masses observed.

Pennsylvania. E. P. Felt (June 23): Full-grown larvae observed on June 21 on a tree in Philadelphia. A little northeast of there two small elms were observed to have been apparently skeletonized.

T. L. Gayton (July 15): Elms infested at Bangor, Northampton County, and also in Bucks County.

A. B. Champlain (July 9): Observed since July 7 defoliating small elms in Dauphin County.

C. F. Campbell (July 11): Prevalent in the Wyoming Valley section of northeastern Pennsylvania, especially in Wilkes-Barre, Kingston, Forty Fort, and smaller towns in the immediate environs. Many of the larger street trees show almost complete defoliation.

New Jersey. H. W. Allen (July 16): Moderate infestation in the vicinity of Moorestown. Untreated trees sufficiently defoliated to be apparent at a distance, rather extensively shedding skeletonized leaves.

Virginia. L. A. Hetrick (July 24): Larvae and pupae abundant at the bases of elm trees at West Point. Foliage already skeletonized.

Ohio. E. W. Mendenhall (July 22): Very abundant in certain sections of Columbus. Trees practically defoliated. Found infesting Chinese elms in Circleville.

Utah. G. F. Knowlton (June 26): Light infestation observed at Smithfield.

Washington. D. J. Landis (July 11): Larvae and pupae observed near the bases of elms at Toppenish; damage observed at Duena.

A LEAF MINER (Fenusa ulmi Sund.)

Rhode Island. B. Eddy (July 10): Infestation is fairly heavy in Washington County.

WOOLLY ELM APHID (Eriosoma americanum Riley)

Maine. Maine Agr. Expt. Sta. (June): Numerous at Presque Isle, Aroostook County.

Rhode Island. B. Eddy (July 20): Unusually heavy infestation, particularly in Washington County.

New York. E. P. Felt (June 23): Sufficiently numerous in one place in Westchester County to cause considerable annoyance, owing to abundant exudation of honeydew.

Oklahoma. F. A. Fenton (July 23): Elms at Stillwater severely infested, in some instances almost every leaf on a tree being covered with this aphid.

Utah. G. F. Knowlton (July): Foliage curled on June 25 at Manti, and at Logan on July 11. Injury at Vernal observed on July 18 to be serious.

ELM COCKSCOMB GALL (Colopha ulnicola Fitch)

Michigan. R. Hutson (July 23): Reported from Saginaw, Saint Johns, and Plymouth.

ELM LACEBUG (Corythucha pallida ulmi O. & D.)

North Dakota. J. A. Munro (July 25): Moderately abundant at Fargo, causing noticeable injury to foliage.

EUROPEAN ELM SCALE (Gossyparia spuria Mod.)

Virginia. A. M. Woodside (July 24): Young scales continued to appear until about the end of June on American elm at Waynesboro; damage was light.

Ohio. E. W. Mendenhall (July 22): Found on elms in nurseries at Zanesville, Muskingum County, causing light damage.

Utah. G. F. Knowlton (July 16): Specimens submitted on July 12; found damaging Siberian elms at Moroni and Manti. (Det. by E. Morrison.) In July many limbs of Camperdown and large American elms were being killed in a garden at Logan.

FIR

A DARK APHID (Dreyfusia piceae Ratz.)

Maine. H. B. Peirson (July 18): Although spreading slowly, this aphid is continuing to increase and extend killing of trees. Generally abundant along the coast, and sufficiently abundant in a few scattered places inland to kill trees, as at Weld and Unity.

BALSAM TWIG APHID (Windorus abietinus Koch)

Utah. G. F. Knowlton (July 12): Fir infested at Logan.

HICKORY

A HICKORY GALL APHID (Phylloxera caryococcum Shin.)

Delaware. E. P. Felt (July 24): Extremely abundant in Wilmington and on leaves received from Newark.

LARCH

LARCH SAWFLY (Lygaeonematus erichsonii Htg.)

Maine. A. E. Drower (July 18): Larvae and cocoons received since July 1 from several places in southeastern and northeastern Maine.

H. B. Peirson (July 18): Found often in abundance in localized areas in Hancock and Washington Counties. In northern Maine there

appears to be only an occasional infested area.

New Jersey. C. L. Griswold (July 16): A plantation of about 150 European larch trees in Mendham Township, Morris County, was almost completely defoliated late in June and early in July. Heavy larval population in all feeding instars was found on June 19.

Idaho and Montana. J. C. Evenden (July 21): During the last few years the infestation has spread southwest from the Flathead River, in Montana, and is well distributed throughout the stands of western larch of northern Idaho and western Montana.

Montana. H. B. Mills (July 15): Worse than for many years on larch in Missoula, Lake, and Flathead Counties.

LARCH CASEBEARER (Coleophora laricella Hbn.)

Maine. A. E. Brower (July): Some trees were turning brown in Enfield on June 7, and infestation was very heavy on July 6 in places on Mount Desert Island.

H. B. Peirson (July 18): Caused severe browning of trees from May 25 to 28 from Kittery to Portland, near Ellsworth, and in Hancock County. Little feeding north of Portland, other than in Hancock County.

Massachusetts. W. W. Bancroft (May 27): Infestation apparently general and severe throughout western Massachusetts.

LINDEN

A LACEBUG (Gargaphia tiliae Walsh)

Indiana. J. J. Davis (July 23): Very abundant on June 26 at Evansville, where it was causing defoliation.

LOCUST

LOCUST LEAF MINER (Chalepus dorsalis Thunb.)

Connecticut. J. T. Ashworth (July 11): Very abundant on black locust at Cobalt, causing conspicuous injury to foliage.

Pennsylvania. G. D. Sloesman (July 15): Quite general throughout eastern Pennsylvania, causing severe damage to black locust; trees practically defoliated in many areas.

T. L. Gayton (July 21): Numerous on black locust in Dauphin County

Maryland. Mary M. Walton and Juliet H. Carrington (July 13): Severe infestation observed from Drury south to Chesapeake Beach, in Anne Arundel and Calvert Counties. Most of the trees were completely browned, and numerous adults were found. (Det. by J. A. Hyslop.)

Juliet H. Carrington (July 27): Further observation on the above infestation showed it to be less severe in the northern section, but still heavy in the southern section.

Virginia. H. G. Walker and L. D. Anderson (July 25): Heavy infestations on many trees in eastern Virginia.

L. A. Hetrick (July 9): Newly emerged adults more abundant than in any season since 1938 on black locusts at West Point.

Ohio. E. W. Mendenhall (July 24): Very serious infestations along the Ohio River, in eastern Ohio.

Mississippi. C. Lyle, et al. (July 24): Heavy damage reported from Union County; reported as numerous in Benton, De Soto, Lafayette, Marshall, and Tate Counties.

LOCUST BORER (Cyllone robiniae Forst.)

Maine. H. B. Peirson (July 18): Common in black locust at Augusta on July 5.

Missouri. A. C. Burrill (June 22): First seen today in recently planted rose-acacia at Jefferson City.

A WEEVIL (Apion nigrum Hbst.)

Maine. H. B. Peirson (July 18): Adults very abundant on black locust and riddling the foliage on July 8 at Augusta.

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma A. & S.)

Nebraska. H. D. Tate (July 17): Collected in considerable numbers on maple in Douglas County on June 23.

GREEN-STRIPED MAPLE WORM (Anisota rubicunda F.)

Kansas. H. R. Bryson (July 24): Reported as stripping leaves from maple trees at Virgil.

A STEM BORER (Priophorus acericaulis MacG.)

New York. E. P. Felt (July 24): Somewhat prevalent, and considerable dropping of leaves caused here and there in an area centering on New York City.

NORWAY MAPLE APHID (Periphyllus lyropictus Koss.)

Michigan. R. Hutson (July 23): Very numerous, causing dropping of foliage in many localities. Reported on July 7 from Cheboygan, and from Jackson, Lansing, and Grand Rapids.

A GALL MIDGE (Dasynceura communis Felt)

New York. E. P. Felt (June 23): Gouty vein gall rather common on sugar maple in the vicinity of White Plains.

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Connecticut. E. P. Felt (June 23): A scale, possibly the above, was sufficiently abundant at Bridgeport on a flowering dogwood that honeydew proved annoying.

Ohio. E. W. Mendenhall (July 1): Present on street elms and maples in Columbus.

GALL MITES (Phyllocoptes spp.)

Connecticut. B. H. Walden (July 21): P. quadripos Shim. is more abundant than usual on silver maple throughout the State.

Massachusetts and Connecticut. E. P. Felt (June 23): The fusiform maple leaf gall (P. aceris-crumena Riley) is somewhat abundant on sugar maples in southwestern Connecticut, and in the Boston, Mass., area.

MOUNTAIN ASH

A SAWFLY (Pristiphora geniculata Htg.)

Maine. H. B. Peirson (July 2): Mountain-ash sawfly generally heavy throughout the State, especially in the west-central part. Larvae are becoming quite large.

OAK

A LEAF ROLLER (Archips fervidana Cten.)

Pennsylvania. E. P. Felt (July 24): Somewhat abundant in the environs of Philadelphia.

PALMERWORM (Dichomeris ligulella Hbn.)

Minnesota. H. J. MacAloney (July 1): Defoliation became noticeable about the middle of June, and many trees are completely defoliated. Pupae are abundant.

A CHRYSOMELID (Baliosus ruber Weber)

Mississippi and Louisiana. T. E. Snyder (July 15): Leaves of red oak trees in La Salle and Catahoula Parishes have been browsed, giving a burned appearance. Previous infestations have been present in Wilkinson County, Miss., adjacent to these parishes. (Det. by E. S. Barber.)

A SAWFLY (Caliroa sp.)

Virginia. L. A. Hetrick (July 3): Larvae are so abundant on oaks in one part of Caroline County that foliage has been noticeably injured. (Det. by R. A. Cushman.)

GALL INSECTS (Neuroterus spp.)

General. E. P. Felt (July 24): N. minutus Bass. has been extraordinarily abundant here and there from Delaware north to Boston, Mass.

Connecticut. E. P. Felt (June 23): Injury by N. niger Gill. has been received from Portland.

Maryland. E. N. Cory (July): White oak leaves injured by N. niger at Baltimore. (Det. by L. H. Weld.)

GALL MIDGES (Diptera)

Connecticut. E. P. Felt (July 24): The oak vein pocket gall, Parallelodiplosis florida Felt, was extremely abundant on a scarlet oak at New Haven.

New York. E. P. Felt (June 23): P. florida was extremely abundant on foliage of pin oak at Pelham. Numerous galls present.

Pennsylvania. E. P. Felt (June 23): Oak twig midge (Lasioptera querciperda Felt) has damaged pin oak at State College. Characteristic cells found in the superficial wood layers.

AN OAK GALL (Callirhytis punctata Bass.)

Connecticut. E. P. Felt (July 24): Knotty oak galls are extremely abundant on an oak at Fairfield.

New York. E. P. Felt (June 23): Found in some numbers on pin oak at Amenia.

OAK CLUB GALL (Andricus clavulus O. S.)

New Jersey. E. P. Felt (July 24): Extremely abundant on a white oak at Short Hills.

A SCALE (Kermes pubescens Bogue)

Pennsylvania. T. L. Guyton (June 27): Observed on oak at Pittsburgh on June 23. Reported as injuring a young oak in Philadelphia.

North Carolina. I. R. Wagner (July 17): Infested post oak twigs collected on July 10 at Oteen. Post oak also observed to be heavily infested in Asheville. (Det. by H. Morrison.)

PINE

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana Schiff.)

Massachusetts. E. P. Felt (June 23): Abundant and injurious in eastern Massachusetts.

Rhode Island. B. Eddy (July 18): Unusually light infestation.

New Jersey. E. P. Felt (June 23): Abundant and injurious in the area around Orange.

A PINE MOTH (Dioryctria zimmermanni Grote)

Minnesota. H. J. MacAloney (July 21): Somewhat common on red pine in the Chippewa National Forest. Larvae bore into the tips of the branches, causing the affected part to turn brown and die. Damage is apparently light, and no evidence of attack in lower parts of trees has been found.

A PINE BARK BORER (Parharmonia pini Kellicot)

Rhode Island. B. Eddy (July 13): The pine bark pitch borer has not been noticed during the last 3 years, but this year several trees have been affected in Westerly and Barrington.

RED-HEADED PINE SAWFLY (Neodiprion lecontei Fitch)

Rhode Island. B. Eddy (July 18): Infestation very light.

Virginia. L. A. Hetrick (July 23): Partially grown larvae are feeding on loblolly pine in Mathews County.

A SAWFLY (Acantholyda erythrocephala L.)

New York and New Jersey. E. P. Felt (June 23): The false pine webworm was sufficiently abundant in parts of Westchester County, N. Y., to cause material injury. Also recorded as defoliating areas in Bergen County N. J.

A PINE SAWFLY (Gilpinia frutetorum F.)

Pennsylvania. L. A. Hetrick (July 18): Reared from larvae collected on an ornamental Scotch pine at Harrisburg on June 15. (Det. by R. A. Cushman.)

A PINE SAWFLY (Itycorsia zappei Roh.)

Rhode Island. B. Eddy (July 17): A few trees found infested in Westerly and East Providence areas.

A PINE SAWYER (Monochamus sp.)

Massachusetts. R. C. Brown (July 26): Heavy infestation in red and white pine at Groton over a large area which was burned over last spring.

BARK BEETLES (Ips spp.)

Virginia. L. A. Hotrick (July 26): I. avulsus Eichh., I. calligraphus Germ., and I. grandicollis Eichh. are killing a few pines that are apparently healthy. Most of the injury is in eastern Virginia, near sawmill sites and storage yards that serve as reservoirs of infestation.

A JUNE BEETLE (Polyphylla occidentalis L.)

Virginia. E. A. Chapin (July 18): A few beetles are feeding on developing needles of loblolly pine in King and Queen and New Kent Counties.

WHITE-PINE WEEVIL (Pissodes strobi Peck)

Rhode Island. B. Eddy (July 18): Infestation considerably lighter this year than in 1940.

A PINE CONE BEETLE (Conophthorus coniperda Schwarz)

Delaware. E. P. Felt (July 24): Somewhat abundant and injurious in the vicinity of Wilmington.

BLACK TURPENTINE BEETLE (Dendroctonus terebrans Oliv.)

Mississippi. C. Lyle (July 24): Specimens received on July 22 from Itawamba County, where they were attacking pine.

WEEVILS (Hylobius spp.)

General. E. P. Felt (June 23): Pine root weevil (H. radialis Buch.) is becoming increasingly abundant and injurious, somewhat extensive injury being noticed recently at Cross River, N. Y. Infestations in spots are present in southwestern Connecticut and on western Long Island, N. Y., affects possibly being hastened by severe winter drying during the last 3 months.

Massachusetts. E. P. Felt (June 23): Injury to small pines by pales weevil (H. pales Hbst.) reported from eastern Massachusetts.

New York. E. P. Felt (July 24): Injury by H. pales found in the top of a small pine tree at Cornwall.

AN APHID (Pineus pinifoliae Fitch)

West Virginia. F. W. Craig (June 28): Specimens taken from pine trees in Greenbrier County. (Det. by P. W. Mason.)

PINE NEEDLE SCALE (Chionaspis pinifoliae Fitch)

Connecticut. M. P. Zappa (July 23): On the increase for several years on pines, especially red and mugho.

Pennsylvania. G. B. Sleesman (July 15): Second brood is hatching in Philadelphia. Infestations not so heavy as those of last year, but it is still considered one of the major pests.

A SCALE (Matsucoccus sp.)

Minnesota. H. J. MacAloney (July 1): First noticed in 1940 in a stand of jack pine in the Cass Lake Ranger district of the Chippewa National Forest. Observations this year show the scale to be common in most stands in the district. (Det. by H. Morrison.)

POPLAR

A LEAF ROLLER (Cacoecia conflictana Walk.)

Maine. A. E. Brower (June 28): Many moths at light at Augusta.

A LEAF MINER (Proleucoptera albella Chamb.).

Nebraska. H. D. Tate (July 17): Cottonwood leaves submitted from Gosper County on June 25 were infested.

LEAF BEETLES (Chrysomela spp.)

Indiana. C. L. Metcalf (July 19): C. lapponica L. reported in abundance in the basement of a house at Lawrenceburg, hiding in cracks and in dark places, late in June and early in July.

Nebraska. H. D. Tate (July 17): Reports of damage to cottonwood trees by C. scripta F. received from Cheyenne, Dawson, Garden, and Buffalo Counties during the period June 16 to July 15.

POPLAR AND WILLOW BORER (Sternochetus lapathi L.)

Ohio. E. W. Mendenhall (July 10): Poplar trees at New Concord are heavily infested and some of them are dying.

Michigan. R. Hutson (July 23): Reported from Allen and Muskegon.

COTTONWOOD BORER (Plectrodera scalator F.)

Missouri. A. C. Burrill (June 18): First adult of the season seen today in Jefferson City.

AN APID (Chaitophorus populicella G. & P.)

Utah. G. F. Knowlton (July): Poplars attacked at Hyrum.

A GALL APHID (Pemphigus populitransversus Riley)

Nebraska. H. D. Tate (July 17): Infested cottonwood leaves were submitted from Boone County on July 9.

SPRUCE

EUROPEAN SPRUCE SAWFLY (Gilpinia polytoma Htg.)

Maine. A. E. Brower (July 1): Larvae in the field are beginning to spin cocoons.

H. B. Peirson (July 18): Diapause has been of a higher percentage than usual. No disease of larvae on trees observed. Some new cocoons had been spun by July 8 in western and northern Maine. Found on Peck Island, near Portland.

YELLOW-HEADED SPRUCE SAWFLY (Pikonema alaskensis Rohw.)

Maine. H. B. Peirson (July 18): During June this sawfly was abundant in places in central Maine. Older infestations yielded a high percentage of parasites from cocoons, mainly Monoblastus sp. and Ichneutes sp. bringing many infestations to a low level. White, red, and Norway spruce are preferred to black spruce, and defoliation is much more complete than on the last.

SPRUCE BUDWORM (Cacoecia funiferana Clem.)

Maine. A. E. Brower (June 28): A dozen moths taken at light at Augusta. Very little balsam or spruce for miles around. These are the first specimens collected in 11 years at the light or in the field. One pupa came from Ashland.

H. B. Peirson (July 1): A few moths taken at light at Augusta; 1 or 2 moths sent in from Hancock County, collected from spruce and fir.

Minnesota. H. J. MacAloney (July 8): Infestation reported from the Gunflint ranger district of the Superior National Forest. Specimens from spruce and jack pine sent in for determination. Examination showed larvae from the different hosts to be different, and it is apparent that both forms are present in stands in the forest.

A SPRUCE NEEDLE MINER (Taniva albolineana Kearf.)

Indiana. J. J. Davis (July 23): Norway spruce damaged at Syracuse on July 8.

A SPRUCE WEDWORM (Epinotia nanana Treit.)

Maine. H. B. Peirson (July 18): No great increase in extent, although there are places where flight of moths seems higher than in the past.

EASTERN SPRUCE BEETLE (Dendroctonus piceaperda Hopk.)

Maine. H. B. Peirson (July 18): Considerable spruce is dying, owing to injury, in an area somewhat northwest of the Rangeley area.

AN APHID (Pineus similis Gill.)

Michigan. R. Hutson (July 23): Recorded on spruce at Escanaba on July 15.

EASTERN SPRUCE GALL APHID (Adelges abietis L.)

Maine. H. B. Peirson (July 18): As abundant as usual, but very much earlier this year in the opening of galls, evidently owing to prolonged spell of hot, dry weather.

Rhode Island. B. Eddy (July 18): Infestation heavier this year than last.

Michigan. R. Hutson (July 23): Recorded on spruce at Fennville and Birmingham.

COOLEY'S SPRUCE GALL (Adelges cooleyi Gill.)

Rhode Island. B. Eddy (July 18): Infestation is normal.

Michigan. R. Hutson (July 23): Two specimens received from Detroit. The galls had opened and the adults emerged. This species is rare in Michigan.

A SPRUCE BUD SCALE (Physokermes piceae Schr.)

New Jersey. E. P. Felt (June 23): Found to be extremely abundant on a spruce at Orange.

SUMAC

A LEAF BEETLE (Elepharida rhois Forst.)

Missouri. A. C. Burrill (June 29): One hundred or more wild bushes defoliated east of Jefferson City, sometimes amounting to 50 percent of the earlier leaves.

REDBUD

A LEAF ROLLER (Gelechia cercorisella Chamb.)

Kansas. H. R. Dryson (July 24): Sufficiently abundant at Manhattan to necessitate spraying. Some trees escaped, but almost all of the smaller trees showed some injury.

TREE-OF-HEAVEN

A MOTH (Atteva aurea Fitch)

Nebraska. H. D. Tate (July 17): Specimen received on July 14 from Butler County.

Oklahoma. F. A. Fenton (July 23): Very injurious and reported from Garber, Mountain View, and Stillwater.

SYCAMORE

A LACEBUG (Corythucha ciliata Say)

Florida. J. R. Watson (July 22): Observed on sycamore trees rather earlier than usual.

Louisiana. C. O. Eddy (July 24): Common but not abundant.

A TUSsock MOTH (Halisidota harrisii Walsh)

District of Columbia. Helen Sollers (July 12): Larva with parasitic cocoons found on sycamore in southwestern Washington on July 11. (Det. by C. Heinrich.) Parasites, determined by C. F. W. Muesebeck as Apanteles phobetri Roh., emerged several hours later.

TUNG-OIL TREE

A FLANNEL MOTH (Lagoa crispata Pack.)

Louisiana. C. O. Eddy (July 24): Larvae were found feeding on leaves at Melville.

WALNUT

WALNUT CATERPILLAR (Datana integerrima G. & R.)

Virginia. L. A. Metrick (July 24): Some defoliation noticeable on trees at West Point. Clusters of caterpillars seen on trunks and branches of walnut and pecan.

WALNUT HUSK FLY (Rhagoletis completa Cross.)

New York. N. Y. State Coll. Agr. News Letter (July 14): Adults observed on July 12 in Niagara County, western New York. Could be found without difficulty in several locations.

WILLOW

EUROPEAN WILLOW LEAF BEETLE (Plagiodera versicolora Laich.)

Maine. H. D. Peirson (July 18): Observed in Augusta on July 1. Medium amount of feeding.

Rhode Island. D. Eddy (July 22): Heavy infestation in Newport County.

New York. R. E. Horsey (July 15): Damage very noticeable and more so than last month on various willows in an ornamental planting at Rochester.

ELM SAWFLY (Cimbex americana Leach)

Nebraska. H. A. Hauke (July 17): Large numbers collected on willow in Platte County on July 15.

AN APHID (Chaitophorus vininalis Monell)

Utah. G. F. Knowlton (July 12): Foliage of willow heavily infested near Heber.

A SCALE (Chionaspis salicis-nigrae Walsh)

Mississippi. C. Lyle (July 24): Specimens of the willow scale were received on July 10 from Monroe County.

I N S E C T S A F F E C T I N G G R E E N H O U S E
A N D O R N A M E N T A L P L A N T S

A LAMIID BORER (Hippopsis lemniscata F.)

Florida. J. R. Watson (July 22): Larva submitted from De Land with the report that it was boring into the stems of flowering plants.

SILVER-SPOTTED SKIPPER (Proteides clarus Cram.)

Nebraska. E. C. Klostermeyer (July 17): Found feeding on wisteria and morning-glory in Lancaster County.

SOD WEBWORMS (Crambus spp.)

Indiana. J. J. Davis (July 23): Reported as destructive in lawns at Anderson on July 16.

STALK BORER (Papaipema nebris nitela Guen.)

Indiana. J. J. Davis (July 23): Reported during the last month from several localities in the northern half of the State. Most of the reports refer to infestation of flowering plants, especially lilies and delphinium.

HAIRY CHINCH BUG (Blissus hirtus Montd.)

Maine. H. B. Peirson (July 18): Very severe injury to lawns in Augusta and vicinity. Second generation was developing on July 12.

Massachusetts. A. I. Bourne (July 23): Outbreak recently reported from southern Bristol County, where lawns in New Bedford are being rather seriously damaged.

Rhode Island. D. Eddy (July 11): Abundant in lawns scattered throughout Providence.

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

Ohio. E. W. Mendenhall (July 10): Abundant and causing some damage on dogwood at Zanesville. Lilac bushes at New Concord are badly infested.

COMMON RED SPIDER (Tetranychus telarius L.)

Ohio. E. W. Mendenhall (July 24): Generally abundant on phlox, and especially so on phlox and other perennials at McConnellsville.

Missouri. A. C. Burrill (June 21): Observed at Jefferson City on violet and catalpa.

ARBORVITAE

ARBORVITAE LEAF MINER (Argyresthia thuiella Pack.)

Maine. H. B. Peirson (July 18): By the latter part of May whole stands of arborvitae near Pittsfield had a very thin appearance, owing to loss of foliage and brown discoloration. All had pupated inside the mines by June 4. Adults emerged on June 13.

A. E. Brower (July): Moths were flying at Bar Harbor on July 6.

A LEAF MINER (Recurvaria piceaella Kearf.)

Maine. A. E. Brower (July): Recorded on arborvitae. Moths were flying at Augusta on July 6. Serious injury reported in the Newport area and elsewhere.

ASTER

A WEEVIL (Apion troglodytes Mann.)

California. R. H. Smith (July 9): Causing considerable damage to commercial plantings of asters at Hermosa Beach, near Los Angeles, feeding on leaves and in the opening buds. (Det. by L. L. Buchanan.)

BOXWOOD

BOXWOOD LEAF MINER (Monarthropalpus buxi Laboulb.)

Rhode Island. B. Eddy (July 22): Infestation is general.

DAHLIA

A WEEVIL (Rhodoabaenus tredecimpunctata Ill.)

Georgia. T. L. Dissell (July 24): Dahlias at Barnesville heavily infested by cocklebur billbug, stalks being riddled. Two full-grown larvae were found in one stalk.

JERUSALEM CRICKET (Stenopelmatus fuscus Hald.)

Utah. G. F. Knowlton (July 18): Dahlia roots attacked in a garden in the Spring Canyon area of Carbon County.

DELPHINIUM

AN APHID (Aphis rociadae Gmll.)

Minnesota. A. G. Ruggles and assistants (July): Found on delphinium in Ramsey County.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Const.)

Rhode Island. B. Eddy (July 22): Infestation very light but still present particularly in Newport County.

Virginia. H. G. Walker and L. D. Anderson (July 25): Many euonymus plants at Norfolk are rather heavily infested.

Mississippi. C. Lyle (July 24): Specimens received on June 22 from Sunflower County, and reports of injury received from Lawrence County.

Texas. R. K. Fletcher (July 23): Present on July 10 in Ellis County, and on July 15 in Fort Bend County.

GLADIOLUS

GLADIOLUS THRIPS (Taeniothrips simplex Morison)

New York. N. Y. State Coll. Agr. News Letter (July 14): Observed in increasing numbers in Niagara County, western New York.

Ohio. E. W. Mendenhall (July 22): Observed on gladiolus in Pickaway, Morgan, and Fairfield Counties.

Florida. J. R. Watson (June 28): Rather abundant in Clay County.

Mississippi. C. Lyle (July 24): Specimens on bulbs received from Hinds County; reports of injury received from the Meridian district.

HOLLY

HOLLY LEAF MINER (Phytomyza ilicis Curt.)

Massachusetts. E. P. Felt (July 24): Moderate damage observed at Cambridge.

Rhode Island. D. Eddy (July 10): Infestation is general.

HOLLYHOCK

PAINTED LADY (Vanessa cardui L.)

Utah. G. F. Knowlton (July 18): Larvae are riddling hollyhock foliage in gardens in northeastern Utah.

APHIDS (Macrosiphum spp.)

Utah. G. F. Knowlton (June 25): Aphids are injuring hollyhock at Murray. (July 18): An aphid, probably M. ambrosiae Thos., is heavily infesting hollyhock in a garden at Vernal.

JAPANESE LANTERN

THREE-LINED POTATO BEETLE (Lema trilineata Oliv.)

Vermont. H. L. Bailey (July 17): Abundant on Japanese lantern at Montpelier, central Vermont.

JUNIPER

A NEEDLE MINER (Recurvaria juniperella Kearf.)

Rhode Island. D. Eddy (July 15): Unusually abundant in Washington and Newport Counties.

JUNIPER SCALE (Diaspis carueli Targ.)

Maryland. E. M. Cory (July 15): Observed on juniper at Cumberland, Baltimore, Takoma Park, and Allen.

Idaho. J. C. Evenden (July 3): Specimens taken from ornamental juniper in Coeur d'Alene, where it is rather serious. (Det. by H. Morrison.)

MAGNOLIA

OLEANDER SCALE (Aspidiotus hederæ Vallot)

Alabama. J. M. Robinson (June 27): Found on purple magnolia at Prattville.

MAGNOLIA SCALE (Neolecanium cornuparvum Thro)

New York. R. E. Horsey (July 15): Very numerous on ornamental magnolias at Rochester. First adult noticed on June 25.

Pennsylvania. C. C. Hill (July 14): Considerable damage to magnolia trees at Carlisle.

PRIVET

A THrips (Dendrothrips ornatus Jabl.)

Rhode Island. B. Eddy (July 22): Heavy infestation on a privet hedge in Barrington.

PYRACANTHA

A LACEBUG (Corythucha cydoniæ Fitch)

South Carolina. J. A. Derly (July 14): Very common on pyracantha throughout the State, considerable damage being done to the foliage.

RHODODENDRON

RHODODENDRON LACEBUG (Stephanitis rhododendri Horv.)

Rhode Island. B. Eddy (July 22): Heavy infestation observed.

New York. R. E. Horsey (July): Little damage at Rochester. Two adults found on June 26 in an ornamental planting.

ROSE

ROSE CURCULIO (Rhynchites bicolor F.)

Rhode Island. B. Eddy (July 23): There is a general infestation.

Nebraska. D. B. Whelan (July 17): Adults observed on June 17 in Seward, Stanton, and Dakota Counties. Observed on wild roses in Richardson County on June 19.

Utah. G. F. Knowlton (June 25): Roses seriously damaged at Murray. (July 21): Roses injured in many gardens at Logan.

A NITIDULID (Carpophilus pallipennis Say)

Wyoming. B. T. Snipes (July 22): Reported as doing appreciable damage to roses in the vicinity of Casper.

A SCARABAEID (Anomala lucicola F.)

Maryland. E. C. Powell (July 13): Specimens submitted with the statement that much damage was being done to rose blossoms at Aspen. (Det. by E. A. Chapin.)

LEAFHOPPERS (Cicadellidae)

Utah. G. F. Knowlton (July 18): Leaves of roses at Logan are being seriously spotted and discolored.

ROSE APHID (Macrosiphum rosae L.)

Utah. G. F. Knowlton (July 12): Scarce on roses in northern Utah.

MOSSY ROSE GALL (Rhodites rosae L.)

Missouri. A. C. Burrill (June 29): Occasionally observed on wild roses near Jefferson City.

SNAPDRAGON

A NYMPHALID (Junonia coenia Lbn.)

California. D. F. Barnes (July 8): Well-grown larvae, which were defoliating snapdragons at Fresno, were reared, adults emerging today.

A NEGRO BUG (Allocoris virilis McA. & M.)

Washington. E. J. Newcomer (June 16): Reported as very numerous on snapdragons at Sawyer, Yakima County. (Det. by E. G. Barber.)

WATERLILY

AN APHID (Rhopalosiphum nymphacae L.)

Utah. G. F. Knowlton (July 23): Leaves and blossoms heavily infested at Logan. Most severely infested leaves above water have curled tightly.

INSECTS ATTACKING MAN AND DOMESTIC ANIMALS

MAN

MOSQUITOES (Culicinae)

- South Dakota. H. C. Severin and G. I. Gilbertson (June 28): Much worse than usual throughout the State, being exceedingly troublesome in the northern third.
- Utah. G. F. Knowlton, et al. (July): On June 30 mosquitoes were extremely abundant and annoying at Green River. Aedes dorsalis Meig. is very annoying near Nephi, Taylorsville, and Centerville. From July 14 to 18 A. dorsalis was reported as troublesome at Manti, Ephraim, Benson, Corinne, Vernal, Maesar, and Roosevelt. Mosquitoes are annoying in many other localities.
- Arizona. R. A. Flock (July 3): Anopheles pseudopunctipennis Theob. is quite common at Benson, biting people out of doors early in the morning.

CHIRONOMIDS (Tendipes sp.)

- California. A. W. Lindquist (July 13): These midges, by far the most seen by the reporter anywhere, were observed in the evening at the edge of Lake Pillsbury in Colusa County, at the north end of the lake near a large area of shallow water. This was surprising in view of the fact that very few of the larvae have ever been taken in bottom samples in the lake.

EYE GNATS (Hippelates spp.)

- Maryland. Helen L. Trembley (July 27): Present around dogs and persons east of Rockville.
- Florida. W. E. Dove (July 27): Very abundant and annoying at Marianna.

BITING GNATS (Leptoconops spp.)

- California. A. W. Lindquist (July 28): On June 30 several inquiries indicated that the vicinity around Cranemore, Sutter County, was generally heavily infested. Also troublesome at Meridian. Season is stated to begin in May, continuing until mid-July, rendering outdoor activities a problem. (Det. by F. C. Bishopp.)

FLEAS (Siphonaptera)

- Massachusetts. A. I. Bourne (July 23): Reported since early in July as unusually abundant in houses, being especially noticeable when the houses had been empty for a while. Infestations took place with or without presence of cats or dogs.

Maryland. E. N. Cory (July 23): General infestation in houses.

District of Columbia. F. C. Bischoff and H. H. Stage (July): Reports of house and yard infestations in and around Washington, though numerous, are about normal in number. All specimens collected or submitted have proved to be the cat flea (Ctenocephalides felis Bouche). (Det. by Helen L. Trembley.)

Ohio. T. H. Parks (July 24): More than the usual number of complaints have been received.

Mississippi. C. Lyle, et al. (July 24): Reported from Hinds, Oktibbeha, and Sunflower Counties. Houses and barns reported as infested in the Meridian district and in the southeastern counties.

Tennessee. G. M. Bentley (July 23): The dog flea is a nuisance generally.

Michigan. R. Hutson (July 23): Complaints received from many localities.

Indiana. J. J. Davis (July 23): Many inquiries from all sections of the State, referring to house, farm-building, and lawn infestations.

ORIENTAL RAT FLEA (Xenopsylla cheopis Rothsch.)

Illinois. C. L. Metcalf (June 26): Reported from a dwelling in Pike County, western Illinois.

GRASS THRIPS (Anaphothrips obscurus Mull.)

Ohio. N. F. Howard (July 11): So numerous in Van Wert County that they are present in decidedly annoying numbers, both on the person and in cars.

BEDBUG (Cimex lectularius L.)

Indiana. J. J. Davis (July 23): Reported from many localities throughout the State.

Mississippi. C. Lyle (July 24): Reported from Lawrence, Marion, and Newton Counties.

South Dakota. H. C. Severin and G. I. Gilbertson (June 28): Information on control requested more frequently than in former years.

Nebraska. H. D. Tate (July 17): Reported as present in a poultry house in York County on June 26, and in a house in Buffalo County on July 9.

Utah. G. F. Knowlton (June 30): House in Promontory is infested. (July 12): Infestations in houses at Logan and Howell.

Oregon. D. C. Mote (July 15): Numerous infestations in houses reported in a newly irrigated area in eastern Oregon.

REDUVIDS (Triatoma spp.)

Arizona. R. A. Flock (July 12): T. rubida Uhler and T. longipes Barber are common in houses and causing serious bites at Safford, Graham County, and Benson, Cochise County. T. rubida is the more common at Safford.

CHIGGER (Eutrombicula alfreddugesi Oud.)

Ohio. T. H. Parks (July 24): More than the usual number of complaints received.

Missouri. L. Haseman (July 26): Complaints received from points throughout the State continue to come in.

BROWN DOG TICK (Rhipicephalus sanguineus Latr.)

Maryland. E. N. Cory (July 19): Infestation in a house in Baltimore.

Missouri. L. Haseman (July 28): A few complaints received during July from the larger cities.

AMERICAN DOG TICK (Dermacentor variabilis Say)

Massachusetts. C. M. Smith (June 30): Adults twice as abundant on Marthas Vineyard during June as in 1940. Adults were not particularly numerous on Cape Cod, and infestations were usually light, though widespread. A deer shot in an area on Naushon Island where ticks occurred was uninfested.

Maryland. Helen L. Trembley (July 27): Noticeably fewer on a farm east of Rockville. None observed on persons, whereas earlier in the season they were present. About a dozen ticks, from unengorged to two-thirds engorged, were removed from a dog.

Missouri. L. Haseman (July 28): The wood tick Dermacentor sp. is abundant.

CATTLE

SCREWORM (Cochliomyia americana C. & P.)

Texas. W. C. Maxwell (July 21): Infestation in the coastal bend area is reported as the most severe in several years.

D. C. Parman (July 22): Adult population on the western Balcones Escarpment for the latter half of June is the highest on record during the last 6 years. Population on the eastern part of the escarpment is approximately normal, or below normal, as it also is on the Rio Grande plain. Population is very low on the immediate Gulf plain and east of San Antonio to Dallas.

HORN FLY (Haematobia irritans L.)

Maryland. Helen L. Trembley (July 27): Average of between 200 and 300 on each of 4 head of cattle east of Rockville.

Oklahoma. W. G. Bruce (June 24): Estimated infestation of 750 flies per head on 16 cattle at Waurika.

Texas. W. G. Bruce (June 30): First appearance on cattle at Dallas was on March 10, when a total of 3 flies were found on 8 head of cattle. Largest number on cattle during March was 42 flies on 6 head on March 21. Not abundant during April and early May, weather conditions being unfavorable. Heaviest infestation at Dallas on June 23 was approximately 2,000 flies on 1 animal. Infestations at Cresson averaged about 2,500 per animal on 50 head of cattle. On June 4, 22 pints of flies were removed from a trap at Cresson, 500 being determined, and 96.4 percent were of this species.

STABLEFLIES (Stomoxys spp.)

District of Columbia. J. L. Webb (July 14): Reporter was persistently annoyed and bitten in a park in Washington.

Florida. W. E. Dove (July 30): First annoyance by S. calcitrans L. on beaches in northwestern Florida was observed on July 26 and 27.

Nebraska. D. B. Whelan (July 17): S. calcitrans reported in Lancaster County on June 16.

LONE STAR TICK (Amblyomma americanum L.)

Missouri. L. Haseman (July 28): Survey throughout the southern half of the State indicated abundance of this tick during the month.

DEER FLIES (Chrysops spp.)

Utah. G. F. Knowlton (July 8): C. discalis Will. and C. fulvastra O. S. are very annoying to man and horses in the Corinne and east Promontory areas.

HORSE

HORSE FLIES (Tabanus spp.)

Missouri. L. Haseman (July 28): Decrease in number of horse flies in central Missouri since the middle of July.

Utah. G. F. Knowlton (June 26): Reported as annoying horses at Woods Cross. (July 8): T. productus Hine and T. punctifer O. S. have been annoying to horses and cattle.

POULTRY

A MITE (Liponyssus sylvianus C. & F.)

Indiana. J. J. Davis (June 14): Heavy infestation of the feather mite on poultry at Spencer. (Det. by H. E. Ewing.)

FOWL TICK (Argas miniatus Koch)

Maryland. E. N. Cory (July 3): Infestation in a poultry house at Lansdowne.

DEER

A BOT FLY (Cephenomyia sp.)

California. P. Simmons (October 29, 1940): Larvae submitted with the report that it had been taken from the nose of a deer in Fresno County. Deer was killed on September 16, 1940, near the Baldy Lookout Station, 10 miles from Shaver Lake. (Det. by E. F. Knipling.)

MINK

A MAGGOT (Wohlfahrtia meigenii Shiner)

Montana. H. B. Mills (July 15): Larvae are killing young mink at a fur farm in Helena.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

TERMITES (Isoptera)

Florida. E. A. Back (June 15): Cryptotermes brevis Walk. is exceedingly abundant in all houses being remodeled in Key West. C. snyderi Light was found infesting a table in this locality.

Michigan. R. Hutson (July 23): Complaints of termites received from Berrien Center, Saint Johns, and Crystal.

Utah. G. F. Knowlton (June 28): Boards in wall of a basement and wood piled in a room of a house at Farmington have been damaged. Reported as numerous in houses in Davis County.

ANTS (Formicidae)

Maine. H. B. Peirson (July 18): The carpenter ant (Camponotus herculeanus pennsylvanicus Deg.) is general in the southern half of the State, causing many inquiries. Injury caused to building timbers in urban and rural communities. Reported once as eating cotton and blankets.

New York. E. A. Back (June 27): Specimens of Formica truncicola integra Nyl. submitted from Mount Vernon. (Det. by M. R. Smith.)

- Pennsylvania. E. N. Cory (July 24): C. herculeanus pennsylvanicus has been reported from Milford.
- Maryland. E. N. Cory (July 24): Requests for information as to control of ants are numerous.
- District of Columbia. E. A. Back (June 20): Specimens of Lasius niger alienus americanus Emery found in a house. (Det. by M. R. Smith.)
- South Carolina. E. A. Back (July 15): Specimens received on July 10 from Bamberg, with statement that they are particularly troublesome in a feed establishment, proved to be the Argentine ant (Iridomyrmex humilis Mayr). (Det. by M. R. Smith.)
- Florida. E. A. Back (June 16): Camponotus abdominalis floridanus Buckley was collected on Ficus nitida at Key West, where it had built a nest from debris in crotch of tree. On June 14 this ant was collected in a house at Key West, where it had built a nest in the floor of a second-story porch. (July 28): Specimens of Paratrechina longicornis Latr. were captured on June 15 as they were moving brood across cement sidewalk at midday. On June 17 winged adults of Solenopsis geninata rufa Jord. were collected as they were flying in large numbers to lights in Fort Myers. Specimens of Wasmannia auropunctata Roger collected on June 20 at Orlando and on June 21 at Winter Park. Although colonies were apparently greatly weakened by winter cold, by late June evidence was found everywhere that much brood was developing. (All ants det. by M. R. Smith.)
- Mississippi. D. Lyle (July 24): I. humilis is reported as annoying in houses in Harrison and Hinds Counties and in southwestern Mississippi.
- Missouri. A. C. Burrill (June 29): Monomorium minimum Buckley observed swarming in unbelliferous flower heads near Jefferson City.
- Utah. G. F. Knowlton (July 1): Ants found attending larvae on lupine at Wellsville on June 25 proved to be Formica munda Whlr. (Det. by M. R. Smith.)
- Arizona. E. A. Back (July 1): Specimens of Camponotus vafer Whlr. received from Bisbee, where they were nesting behind woodwork of window frame. (Det. by M. R. Smith.)
- California. P. Simmons (July): Winged adults of Pogonomyrmex californicus Buckley observed in large numbers on the ground at Fresno. Swarming observed late in the afternoon. (Det. by M. R. Smith.)

PAVEMENT ANT (Tetranorium caespitum L.)

- New York. E. A. Back (June 3): Winged specimens received from Binghamton. (Det. by M. R. Smith.)

Pennsylvania. E. A. Back (July 2): Specimens received from Philadelphia were taken from rotten spots in wooden window sill. (Det. by M. R. Smith.)

District of Columbia. E. A. Back (June 20): Winged specimens submitted from northwestern Washington. (Det. by M. R. Smith.)

Illinois. W. E. McCauley (July 12): Specimens submitted on June 6 from East Saint Louis, Saint Clair County, with report that small red ants were eating seed and roots on potatoes in the ground. (Det. by M. R. Smith.)

A COCKROACH (Blaberus craniifer Burn.)

Florida. E. A. Back (June 14): Collected beneath door step in Key West. (Det. by A. B. Gurney.)

GERMAN COCKROACH (Blattella germanica L.)

Mississippi. C. Lyle (July 24): Reported from Tunica County on June 23.

Nebraska. H. D. Tate (July 17): Specimens sent in from Custer County on July 12.

Utah. G. F. Knowlton (July 11): A large residence building at Logan has been invaded.

Wyoming. B. T. Snipes (July 22): Abundant in a house in Casper and also in vines and shrubbery adjacent to the building.

ORIENTAL COCKROACH (Blatta orientalis L.)

Utah. G. F. Knowlton (June 30): Apartment house in Salt Lake City infested.

BROWN-BANDED ROACH (Supella supellectilium Serv.)

Maryland. E. A. Back (July 10): Collected in a new house in Chevy Chase

Virginia. E. A. Back (July 3): Collected in a house in Alexandria.

CRICKETS (Gryllus spp.)

District of Columbia. E. A. Back (July 15): House cricket (G. domesticus L.) very abundant in city dump in southeastern section of Washington. Much injury caused to clothing in nearby houses. (July 20): House crickets have been very troublesome in houses near a city dump in northwestern Washington.

Virginia. E. A. Back (July 21): G. domesticus has been annoying in a house near a dump in Alexandria.

Mississippi. G. L. Bond (July 22): Black crickets, supposedly G. assinilis F., reported as having invaded a new house in Jackson County, causing injury to clothing.

Kansas. H. R. Bryson (June 26): G. assinilis is reported as abundant and causing much annoyance at Strong City.

Utah. G. F. Knowlton (June 26): Field crickets abundant in a garden near Brigham.

Arizona. C. D. Lebert (July 20): G. assinilis has been congregating around houses and stores in Phoenix in countless numbers, invading buildings and causing much annoyance.

PSOCIDS (Psocidae)

Virginia. H. G. Walker and L. D. Anderson (July 25): Reported as causing much annoyance in a new house at Portsmouth.

WHARE BORER (Nacorda melanura L.)

Massachusetts. E. A. Back (June 25): Specimens received from Lowell, where adults were troublesome in a building.

District of Columbia. Helen Sollers (June 20): Adult collected on pavement in southwestern Washington. (Det. by J. M. Valentine.)

TISSUE PAPER BUG (Thylognathus contractus Mots.)

District of Columbia. E. A. Back (July 24): Found in showcase in Washington, apparently feeding on parchment covers of books in exhibition in library.

Illinois. E. A. Back (July 10): Two larvae sent from Chicago, where they were found in an empty suitcase.

A CERAMBYCID (Goes pulverulentus Hald.)

Virginia. E. A. Back (July 3): Adult submitted with report that it flew into a dress on a line at Richmond and ate 20 large holes in it. (Det. by W. S. Fisher.)

SEED-CORN BEETLE (Agonoderus lecontei Chaud.)

Indiana. C. L. Metcalf (July 19): Reported in abundance in basement of a building at Lawrenceburg late in June and early in July.

DRIED FRUIT BEETLE (Carpophilus hemipterus L.)

California. D. F. Barnes (June 23): Census trapping in two fig plantings in Fresno County, from February 25 to May 19, indicated the spring population to be 107 percent of normal, based on an 11-year record for these locations. Catch in 484 trap days was 6,652 beetles, or 13.7 per trap per day.

HESSIAN FLY SURVEY AT HARVESTTIME 1941

Summarized by W. B. Cartwright

Division of Cereal and Forage Insect Investigations

U. S. Bureau of Entomology and Plant Quarantine

Field surveys made by the Bureau of Entomology and Plant Quarantine laboratories at Manhattan, Kans., La Fayette, Ind., and Carlisle, Pa., and by the State agricultural experiment stations of Illinois, Ohio, Kentucky, Missouri, and Nebraska indicate that Hessian fly infestations are low in wheatfields throughout eastern, north-central, and western Pennsylvania, eastern Maryland, Delaware, northwestern and northeastern Virginia, north-eastern Ohio, southwestern Michigan, northern Indiana, southwestern and south-central Nebraska, northwestern Kansas, and northern Oklahoma. There are, however, menacing populations of flies in local fields and areas in most of these regions.

Hessian fly infestations range from low to moderate in south-central Pennsylvania, western Maryland, north-central North Carolina, northwestern, east-central, and southeastern Missouri; moderate to heavy in southern Virginia, western and central Ohio, southeastern Michigan, central and southern Indiana, eastern and southern Illinois, eastern Kentucky, west-central and eastern Tennessee, northeastern and west-central Missouri, north-central and south-central Kansas; and heavy infestations in western Kentucky, southwestern Missouri, southeastern Nebraska, northeastern and southeastern Kansas. General examinations and observations by State entomologists in Iowa and Illinois indicate that Hessian fly may be found moderately to fairly heavy in the counties where winter wheat is grown in the States. Rigid observance of the safe-sowing dates is advised in the major winter Wheat Belt due to the wide spread and general increase of the fly this year.

The data summarized in the following table, and the accompanying map, indicate more fully the regions covered by the survey and the general trend of fly infestations. A field sample in the survey usually consisted of 50 wheat stems.

Hessian fly survey at harvesttime 1941

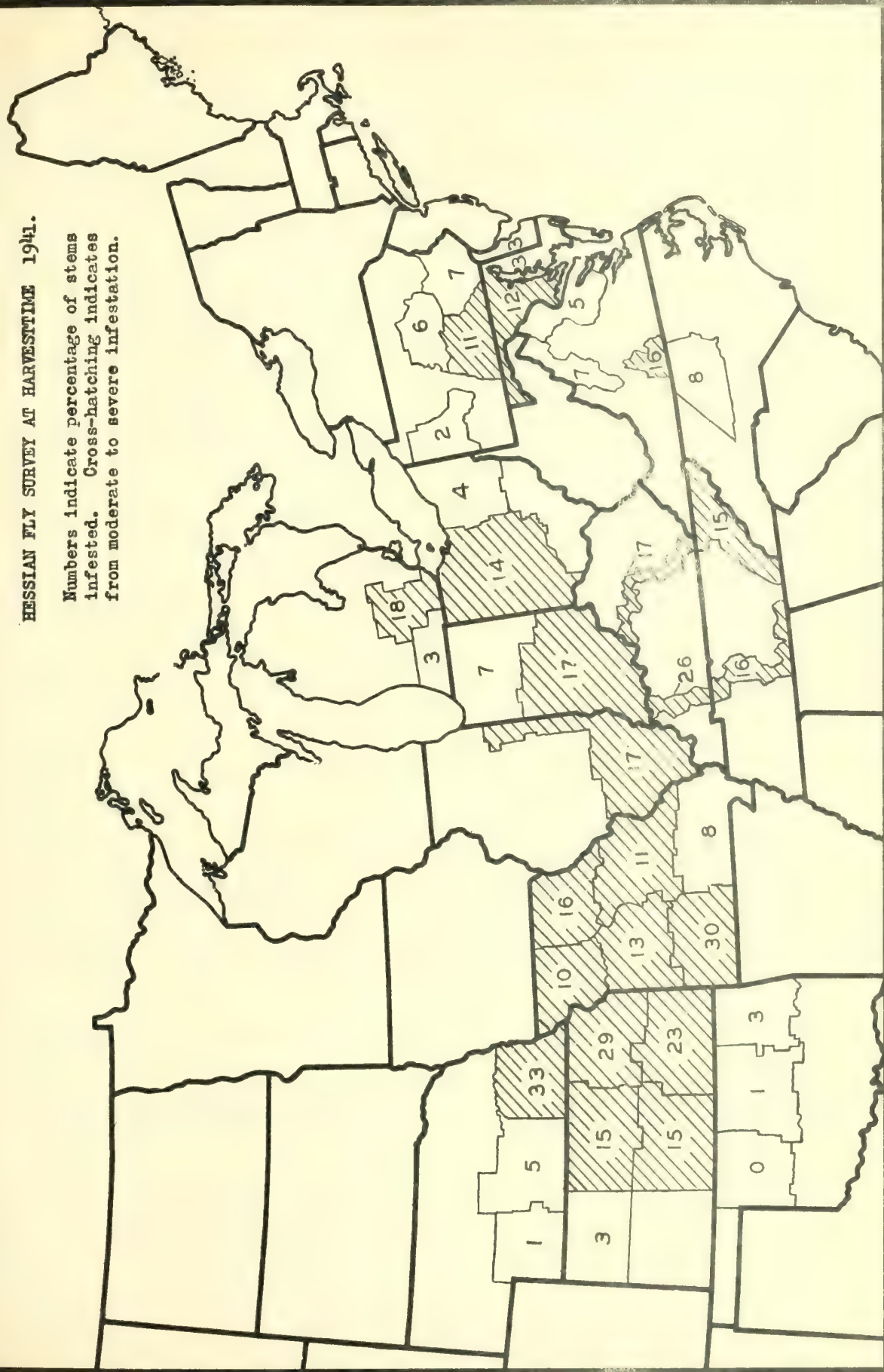
Area	Fields :sampled :Number	Stems infested		
		Average :Percent	Maximum :Percent	Minimum :Percent
Nebraska:1/	:	:	:	:
Southwestern-----	23	1	2	0
South-central-----	25	5	20	0
Southeastern-----	40	33	100	0
:	:	:	:	:
Kansas:	:	:	:	:
Northwestern-----	10	3	6	0
North-central-----	38	15	78	0
Northeastern-----	44	29	88	0
South-central-----	32	15	96	0
Southeastern-----	29	23	72	2
:	:	:	:	:
Oklahoma:	:	:	:	:
Northwestern-----	8	0	0	0
North-central-----	33	1	8	0
Northeastern-----	37	3	18	0
:	:	:	:	:
Missouri:1/	:	:	:	:
Northwestern-----	19	10	26	0
West-central-----	29	13	34	0
Southwestern-----	24	30	76	0
Northeastern-----	28	16	86	0
East-central-----	20	11	26	0
Southeastern-----	12	8	54	0
:	:	:	:	:
Illinois:1/	:	:	:	:
Eastern and southern-----	74	17	74	0
:	:	:	:	:
Michigan:	:	:	:	:
Southwestern-----	32	3	10	0
Southeastern-----	39	18	50	2
:	:	:	:	:
Indiana:	:	:	:	:
Northern-----	138	7	34	0
Central and southern-----	218	17	74	0
:	:	:	:	:
Ohio:1/	:	:	:	:
Western and central-----	-	14	-	-
Northeastern-----	-	4	-	-
:	:	:	:	:
Kentucky:1/	:	:	:	:
Western-----	17	26	44	10
Eastern-----	28	17	52	0

Hessian fly survey at harvesttime 1941.---Continued

Area	Fields	Stems infested		
	sampled	Average	Maximum	Minimum
	Number	Percent	Percent	Percent
Tennessee:	:	:	:	:
West-central-----	36	16	70	2
Eastern-----	52	15	50	4
	:	:	:	:
Pennsylvania:	:	:	:	:
Eastern-----	29	7	20	0
North-central-----	22	6	22	0
South-central-----	35	11	80	0
Western-----	15	2	8	0
	:	:	:	:
Delaware-----	10	3	10	0
	:	:	:	:
Maryland:	:	:	:	:
Eastern-----	15	3	16	0
Western-----	25	12	56	0
	:	:	:	:
Virginia:	:	:	:	:
Northeastern-----	40	5	26	0
Northwestern-----	20	7	20	0
Southern-----	15	16	50	0
	:	:	:	:
North Carolina:	:	:	:	:
North-central-----	40	8	44	0

^{1/} Data obtained partly or mostly by State entomologists.

Numbers indicate percentage of stems infested. Cross-hatching indicates from moderate to severe infestation.





THE MORE IMPORTANT RECORDS FOR AUGUST

The Melanoplus mexicanus Sauss. infestation in the Sulphur Springs Valley of Arizona is one of the few instances of recent times in which this species has developed to serious outbreak numbers under purely range conditions. In addition to M. mexicanus several other species of grasshoppers occurred in the infested area in Arizona. The most numerous of these is probably Aulocara ellioti Thos., followed by several other range species. The large bush grasshopper, Schistocerca shoshone Thos., was quite numerous in certain areas and was particularly destructive in peach orchards southwest of Willcox, Ariz. In Oklahoma and Texas light infestations of second-generation M. mexicanus are apparent, but crop damage is negligible. The same condition exists in western Kansas. In the early part of August throughout central Wisconsin M. femur-rubrum Deg. had replaced M. bivittatus Say as the dominant grasshopper species. Crop damage was increasing, especially to second-growth alfalfa, and was more severe than at any previous time this year.

Mormon cricket infestations were observed during the month only in limited numbers and in localized areas in the tri-State area of Idaho, Nevada, and Oregon, and in some small agricultural areas in Sheridan County, Wyo.

White grubs caused considerable damage to lawns in New England and Middle Atlantic States southward to Virginia and to Kentucky.

The Japanese beetle occurred in unprecedented numbers during the last week in July and the first week in August in Connecticut and seriously damaged sweet corn and fruits and berries in Westchester County, N. Y. At the Virginia Truck Experiment Station over seven times as many beetles were collected in traps this year as during last season. Several new infestations were found in the Chicago area of Illinois and a single specimen was collected at Bloomington in the central part of the State.

New infestations of white-fringed beetle were reported from Escambia and Dallas Counties, Ala.

The beetle Calomycterus setarius Roelofs is now known to occur in 12 towns in Connecticut. The adult feeds on a wide variety of flowering plants. It was also recorded from New York this month.

Very heavy infestations of the false chinch bug are reported from Utah and Arizona. In Utah the insects were severely damaging alfalfa and truck crops.

The hessian fly situation is being published as a supplement to the last number of the Survey Bulletin.

The European corn borer is generally less numerous than last year in New England, about the same as last year in western New York, and decidedly heavier than last year in southern New Jersey. In parts of Ohio and Illinois rather heavy infestations were reported, particularly on sweet corn.

The corn ear worm was increasing rapidly in late sweet corn in the Northern States. In Louisiana late corn was practically destroyed.

Heavy infestation by the alfalfa caterpillar in the San Joaquin Valley of California during late July was very rapidly terminated by an epidemic of wilt disease among the larvae.

Severe injury by the sugarcane borer is becoming apparent in localized areas in Louisiana.

During the early part of the month there was a decided increase in second-generation codling moths in New England and New York State southward to Virginia and westward to Illinois and Kentucky.

Heavy injury by oriental fruit moth is reported from eastern New York and parts of Virginia, while in the East Central States the infestation is lighter than it has been for several years.

In the Fort Valley section of Georgia plum curculio infestation by second-brood larvae was heavier than it has been recently. Similar conditions prevail in Ohio, Kentucky, and Mississippi.

Somewhat heavy infestations by the grape berry moth were reported from western New York and northern Ohio.

Considerable damage by the potato leaf hopper was reported early in the month in New York and Minnesota.

Potato aphids were more troublesome than usual on tomatoes in Connecticut and New York.

The Mexican bean beetle was reported as generally prevalent throughout New England and more troublesome in western New York than it has been for several years. Reports of damage were also received from the South Atlantic States and from Ohio to the Gulf. Hot, dry weather in the South materially cut down populations.

The boll weevil situation remains acute throughout the Cotton Belt.

The cotton leaf worm is very abundant in the Gulf region with outbreaks also reported from Arkansas, Oklahoma, and Missouri.

The bollworm is generally prevalent over the South Atlantic States and severely damaging bolls in northwestern Louisiana, Oklahoma, and the greater

part of Texas.

Cotton aphids are more numerous than they have been for several years in South Carolina, Georgia, and Florida, and in the Gulf States through Texas to Arizona.

The fall webworm was generally abundant through New England and the Middle Atlantic States westward to Ohio and Missouri.

Decided increase in abundance of the brown-tail moth is reported from Maine and New Hampshire.

The bronze birch borer caused widespread damage throughout northern and eastern Maine. This insect was also reported from parts of Ohio.

Severe damage to elms by the elm leaf beetle reported from New England, Ohio, and Kentucky.

Locust leaf miner severely browned the foliage of locusts from Connecticut southward to Virginia and westward to Ohio and Tennessee.

The More Important Records in Canada

for July-August

In Manitoba, the majority of the common grasshoppers had reached the winged stage by July 22, but up to the latter part of August no flights had been observed or reported in the Province. During July the numbers of the clear-winged grasshopper were considerably reduced by the fungous disease Empusa grylli, but other species were unaffected and light to moderate damage to grain crops occurred in many areas. A survey in August showed that this species was abundant in northern and north-eastern districts. In the Red River Valley, the two-striped grasshopper was present in menacing numbers and damaged late crops, especially barley. The general grasshopper infestation was shown by surveys to be light to moderate over the greater part of the agricultural area of the Province. In Saskatchewan, the grasshopper outbreak was reported in June to be less severe than in any season during the past decade; the lesser migratory grasshopper was practically the only species of economic importance, and up to mid-July hardly any crop damage had occurred. However, the absence of concerted efforts to use tillage or bait for control, and severe drought conditions, resulted in considerable damage developing in many areas during the latter part of July along crop margins. In August, a marked increase of grasshoppers compared with 1940 was reported over much of the Province, and damage occurred to later crops. Head damage was comparatively light, but flax suffered severely in some areas. In Alberta, rains were reported to have destroyed large numbers of grasshoppers in the spring, and these insects, particularly the lesser migratory grasshopper, were greatly reduced in numbers compared with 1940. However, some losses to grain and hay crops occurred, especially in drier areas.

One of the most severe outbreaks of the wheat stem sawfly ever recorded developed over a large part of the open prairie area in Saskatchewan and Alberta. Many fields of grain showed 100-percent infestation, and crop

losses as high as 20 percent were reported. The sawfly was also more injurious in Manitoba than for a number of years, but, in general, the infestations in this Province were not serious.

Say's stinkbug caused losses to wheat in the Turin-Taber-Wrentham area of Alberta. Infestations were more extensive than for any season except perhaps 1938.

The beet webworm, large flights of which occurred throughout the Prairie Provinces in June, attacked sugar beets, garden crops, and alfalfa in southern Alberta in July, and some losses were reported in spite of an extensive control program. Damage also occurred in beet-growing areas of Manitoba, but this was less severe than in 1940.

During May, the so-called green peach aphid was recorded for the first time in spring colonies on wild plum in New Brunswick. The first nymphs were found on potato plants at Lindsay and St. Stephen, N. B., on June 16 and 17 constituting the earliest record of its movement to potato.

At mid-August, the European corn borer was reported to be apparently less prevalent in southern Ontario than in 1940, a year of severe outbreak. Sweet corn was averaging from 15 to 50 percent cob infestation.

The usual reports of infestation and crop damage by the imported cabbage moth and the Colorado potato beetle have been received from various districts in Canada. Apparently infestations are about average.

The pea aphid was reported infesting peas in pea-growing areas in the Gaspé, southern Quebec, eastern and southwestern Ontario, southern Alberta, and locally in British Columbia. Material damage from their attacks was noted only locally in Ontario, and in the Taber-Darnwell area of Alberta. In the latter area, in spite of control measures, the crop loss in many cases was as high as 50 percent.

The pea moth has been recorded for the first time on Vancouver Island, at Saanichton, British Columbia. It is now known to be established all over the southern coastal area of the Province.

The sweetclover weevil occurred widely in Ontario, Manitoba, and eastern Saskatchewan during June. Damage to sweetclover was severe locally.

The codling moth appeared to be equally as abundant as in 1940 in orchards in the Annapolis Valley, Nova Scotia, with an increase reported in the Derwick area. In Ontario, seasonal conditions favored an increase of this pest. In British Columbia the infestation threatened to be one of the most serious on record for that Province, both in the interior and on the coast.

Twig injury to peach by the first- and second-brood larvae of the oriental fruit moth was generally much lighter than last year in southern Ontario.

The tarnished plant bug was destructive to peach nursery stock in the

Niagara District, Ontario. Injury to peaches known as "cat-facing", which may be due to this species, was reported locally in the Okanagan Valley, British Columbia.

Grape leafhoppers are again present in outbreak form in the Niagara District, Ontario.

An extensive and heavy outbreak of the spruce budworm has developed in northern Ontario from the eastern extremity of Lake Superior, eastward to Kipawa Lake, and south to Algonquin Park. The northern limits are not yet defined, but heavy infestations occurred at Chapleau and Biscotasing. White spruce was severely attacked even in areas where there is little balsam, and mortality may be high. The outbreak of the form on jack pine appears to be on the decline in northwestern Ontario, but has increased in Saskatchewan. In Manitoba, spruce and tamarack were heavily attacked in the Spruce Woods Reserve.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

- Arizona. B. M. Gaddis and assistants ^{1/} (August 3-9): Second-generation Melanoplus mexicanus Sauss. which developed only in crop land in the Stuart district of Cochise County and the Gila River Valley of Graham County, range in development from first- to fourth-instar nymphs. Populations averaged 80 per square yard in the Stuart district and slightly less in the Gila River Valley area. Second-generation M. mexicanus ranging in development from first- to fifth-instar nymphs in evidence in scattered fields in Maricopa County. M. differentialis Thos. infestations in Maricopa County were spotted and confined to field margins, roadsides, and irrigation ditches.
- New Mexico. ^{1/} (July 27-August 2): M. differentialis is the dominant species and M. bivittatus Say second dominant in the Rio Grande Valley and in San Miguel and Mora Counties. Damage to alfalfa and sweet clover in San Miguel County ranged up to 40 percent total leaf injury with heavy marginal injury.
- Colorado. ^{1/} (July 27-August 2): Hatching of second-generation M. mexicanus was under way in eastern Colorado, east of Elbert County. Populations were generally light and averaged less than 10 per square yard in the infested fields. M. mexicanus was 70 percent dominant in the above area and M. bivittatus and M. differentialis were next in importance. Local migrations have resulted in reductions in grainfield populations and increases in weedy fields, corn, feed crops, alfalfa, and sugar beets. Damage to date has been very light.
- Texas. ^{1/} (July 27-August 2): First-, second-, and third-instar nymphs of second-generation M. mexicanus were present in the Texas Panhandle in small numbers. General populations in Randall, Collingsworth, Wheeler, Hemphill, Potter, Carson, and Armstrong Counties averaged light in intensity. M. mexicanus represented 80 percent of the grasshoppers present and M. differentialis 15 percent. Damage was very light due to the excellent condition of the vegetation. (August 3-9): A survey of the northern tier of counties in the Texas Panhandle showed a general, light infestation of first-generation adult M. mexicanus. A light infestation of second-generation M. mexicanus nymphs, averaging 5 per square yard, was present.
- Oklahoma. ^{1/} (August 3-9): Light populations of second-generation M. mexicanus were reported in Cimarron, Harper, and Texas Counties in northwestern Oklahoma. First-, second-, and third-instar nymphs averaged 5 per square yard in the infested areas in these counties.
- Kansas. ^{1/} (July 27-August 2): Only very light, minor flights of M. mexicanus were observed during the week. Second-generation M. mexicanus was observed west of Ness County. Populations were lighter than in

^{1/} Where no name is given after the State the report is by B. M. Gaddis and assistants.

1940 but were scattered over a larger area. Damage to corn was noted in Phillips, Smith, Osborne, Rooks, Ellis, and Russell Counties. This type of damage was caused by M. bivittatus and M. differentialis.

(August 3-9): A light hatching of second-generation M. mexicanus was reported in the northwestern counties of Norton, Cheyenne, Decatur, and Rawlins; concentrations did not exceed 3 or 4 per square yard in margins, and were less than 1 per square yard in stubble fields. In Sherman, Thomas, and Sheridan Counties, marginal counts ran as high as 7 or 8 per square yard in isolated cases while field counts were as high as 3 per square yard. Lighter populations were observed in Gove, Logan, Trego, and Wallace Counties. Second-generation M. mexicanus nymphs averaging less than 5 per square yard were reported in the southwestern counties west of Seward County. Crop damage was confined mainly to corn and in irrigated valleys to alfalfa.

Nebraska.^{1/} (August 3-9): Marginal damage to corn was becoming increasingly apparent in the section of the State from Hall County eastward along the Platte River. Severe damage to alfalfa was reported in Hamilton, Seward, and York Counties where 100-percent defoliation to entire fields was noted in several instances. Second-generation M. mexicanus were observed in southern Nebraska from Seward County westward to Cheyenne County. Field populations ranged up to 20 per square yard and marginal populations up to 35 per square yard.

Arkansas.^{1/} (July 20-26): Infestation in northeastern Arkansas was found to be limited to the area between the Mississippi and Saint Francis Rivers with populations somewhat heavier in the immediate vicinity of the Mississippi River. Populations were widely scattered, from 90 to 100 percent being M. differentialis, of which 90 percent were adults.

Missouri.^{1/} (July 20-26): M. differentialis, the dominant species, comprising 90 to 100 percent of the populations in southeastern Missouri, was 90 percent adult.

H. E. Brown (August 29): A few ovipositing females of M. bivittatus are still present at Columbia. Practically all individuals of M. differentialis are now adult. Populations over the State generally are too low for satisfactory collecting for adult survey.

Iowa.^{1/} (August 3-9): Grasshopper infestations in the western half of Iowa were revealed by the survey to be highly spotted with M. mexicanus distributed generally over southwestern Iowa, M. femur-rubrum Deg., the dominant species in northwestern Iowa, and light populations of M. differentialis, occurring occasionally along the Missouri River Valley. Second-generation M. mexicanus were present over the southwestern portion of the State.

Minnesota.^{1/} (July 20-26): Infestations in the east-central portion of the State were reported very spotted and of little economic importance; M. femur-rubrum, the dominant species, was mainly in the third instar. In southwestern Minnesota, 70 percent of M. differentialis and 100 percent M. bivittatus were adults, the heaviest and most serious infesta-

tions occurring in Pipestone and western Murray Counties. Infestations in southeastern Minnesota were found to be of noneconomic importance with M. femur-rubrum still hatching and the majority of the grasshoppers second-, third-, and fourth-instar nymphs. Local dispersal of M. bivittatus, M. mexicanus, Camnula pellucida Scudd., and M. packardii Scudd. was continuing in northwestern Minnesota. Marginal damage to grainfields was moderately severe in portions of Marshall and Kittson Counties.

(July 27-August 2): Very warm, dry weather conditions persisted over most of Minnesota during the week, causing considerable drying of pastures and marginal vegetation. Grasshoppers were moving into the greener, late crops and damage was beginning to show in corn, alfalfa and flax. Twenty-five percent of the M. femur-rubrum and 75 percent of the M. differentialis were in the adult stage.

North Dakota.^{1/} (July 20-26): Grasshoppers in Grand Forks, Walsh, and Pembina Counties in northeastern North Dakota were 90 percent adult, while infestations in other counties in that section of the State contained a large percentage of third-, fourth-, and fifth-instar nymphs. Marginal vegetation was beginning to dry and grasshoppers were scattering. Damage was believed to be less than 2 percent for the area as a whole. In the southwestern counties the dominant species was M. mexicanus. With the drying of marginal and idle land vegetation, grasshoppers were moving into fields, causing some damage to corn, wheat, oats, and flax. Crop damage in Emmons County is estimated at 20 percent, in Sioux County at 18 percent, and in Grant County at 8 percent. Damage in other areas has been negligible. Light populations were reported in the northwestern North Dakota counties of Burke, Divide, McKenzie, and Williams. (July 27-August 2): M. differentialis was the dominant grasshopper in Martin, Sioux, and Emmons Counties in south-central North Dakota, where approximately 85 percent of the grasshoppers were adult. In the east-central portion of the State, 80 percent of the grasshoppers present were adult, and many fields were beginning to show considerable leaf damage. (August 3-9): Ninety percent of the grasshoppers in northeastern North Dakota have reached the adult stage and copulation and oviposition are in progress.

South Dakota.^{1/} (July 27-August 2): Populations were nearly 100 percent adult in the State as a whole. The grasshoppers were beginning to settle down and only slight shifts were observed during the week. All of the major species were ovipositing and M. bivittatus had reached the peak. The small-grain harvest was practically completed and haying was well under way. Considerable damage to corn occurred from the dry, hot winds as well as from grasshoppers.

Montana.^{1/} (July 27-August 2): Adult M. mexicanus were working on wheat and oat crops in Toole County but the harvest was well under way and should be completed before any severe damage occurs. In southern Montana, approximately 75 percent reached the adult stage. M. mexicanus was the dominant species with M. bivittatus and M. differentialis second in importance. Adult dispersals changed the situation from a spotted to

general infestation. Limited areas in western Montana were experiencing difficulty with grasshoppers and some bait was spread as damage became apparent.

Wyoming.^{1/} (July 27-August 2): M. femur-rubrum was the dominant species in the Big Horn Basin area and comprised 75 percent of the total population. Earlier in the season, M. bivittatus had been the dominant species. Approximately 50 percent of M. femur-rubrum were in the fourth and fifth instars. Active oviposition by M. bivittatus was observed.

. B. T. Snipes (August 11): Heavy populations of M. femur-rubrum still exist in Park and Big Horn Counties, where the grasshopper build-up is at its peak. All species are considerably less numerous in other Wyoming counties. Small local flights of M. mexicanus have been observed in Sheridan County.

Idaho.^{1/} (July 27-August 2): M. femur-rubrum is the dominant species in Cassia County. M. mexicanus is the dominant species in Gen, Ada, and Elmore Counties, where threatening populations are still present. Practically all in the adult stage. (August 3-9): Survey in Adams, Canyon, Gen, Payette, and Washington Counties in western Idaho disclosed M. mexicanus populations to average 3 per square yard in all Bromus tectorum range areas. Practically all were adults.

Utah.^{1/} (July 20-26): M. bivittatus, M. mexicanus, and M. packardii were the species continuing to cause most of the damage in central, north-central, and south-central Utah. Approximately 80 percent of the grasshoppers were adults. Severe marginal defoliation of alfalfa was reported in many localities in these sections of the State. Light to severe injury to oats, sugar beets, second-growth alfalfa, berry, and orchard crops was reported in various localities. (July 27-August 2): M. bivittatus was the dominant species in the irrigated sections of central and southwestern Utah. M. packardii and M. mexicanus predominated in the dryland farming and benchland areas of the State. Approximately 90 percent were in the adult stage. Severe damage occurred on alfalfa in Juab, Beaver, Millard, Salt Lake, Davis, and Cache Counties. In the latter three counties, general migrations of M. mexicanus occurred from range and idle land into the more succulent cultivated crops.

Nevada.^{1/} (July 20-26): With the exception of the Baker area in White Pine County, crop damage in all areas was negligible. In the Baker area, some damage to second-growth alfalfa, corn, and small grains was occurring. M. occidentalis in Nye and Lander Counties were scattering and oviposition generally in progress. A large band of this species, which originated this spring near Dunphy, Eureka County, was located north of Battle Mountain, the migration having covered some 35 to 40 miles this season. Egg pods averaging 12 per square foot were found over a 5-mile area in this district. (July 27-August 2): One hundred and twenty acres of alfalfa and oats in the Pilot area of Elko County was infested with an average of 30 grasshoppers per square yard. M. packardii, M. bivittatus, and M. mexicanus were the species involved.

California. O. G. Bacon (July 22): M. devastator Scudd. caused some damage to dry, first-crop Mission figs on the ground and in a drying yard at Round Mountain. Holes were chewed in the figs, causing them to be classed as culls. Insects were numerous on the highway near the Grey Colony School, east of Fresno, having migrated from grain stubble.

Wisconsin. B. M. Gaddis (July 27-August 2): The dominant species still M. bivittatus, with M. femur-rubrum showing up heavily in spots. Considerable damage was done to second-growth alfalfa and clover hay fields. Farmers were not alarmed, however, due to the bumper first crop of hay. (August 3-9): Throughout central Wisconsin, M. femur-rubrum replaced M. bivittatus as the dominant species. Crop damage was increasing, especially to second-growth alfalfa and red clover, and was more severe than at any previous time this year.

Michigan.^{1/} (July 20-26): Crop damage was reported becoming more acute in the northwestern portion of the Lower Michigan Peninsula. Harvesting of small grains was well under way, resulting in movement of the grasshoppers to other crops. Heavy damage occurred to oats, rye, alfalfa seedlings, and beans. A total loss of alfalfa seedlings occurred in several instances and 20 percent loss to rye was reported due to destruction of ripening seed. Some corn damage was beginning. (August 3-9): Grasshopper development in the northern portions of the Lower Michigan Peninsula was well advanced with more than 80 percent of the grasshoppers in the adult stage.

Ohio. T. H. Parks (August 26): Serious local outbreaks occurred throughout central and southern Ohio during July and August. Complaints were most numerous during the first week of August.

Kentucky. M. L. Didlake (August 26): Grasshoppers still reported as numerous and destructive to field crops, vegetables, and flowers.

Pennsylvania. H. M. Worthley (August 19): On August 13 a young apple orchard in Aspers, Adams County, was observed as practically defoliated by red-legged grasshoppers, M. femur-rubrum, which rose in clouds from the stubble of a recently cut cover crop. Damage was noted on low-hanging foliage and fruit of apple in nearby sodded orchards. H. M. Steiner, of Arendtsville, Adams County, reported increasing damage by this species to ripening peaches in cover-cropped orchards.

Rhode Island. B. Eddy (August 28): Infestation by the grasshoppers M. femur-rubrum and Dissosteira carolina L. is unusually heavy throughout the State.

MORMON CRICKET (Anabrus simplex Hald.)

South Dakota. B. M. Gaddis (July 20-26): Reported as concentrated along margins and fencerows with little movement. Egg deposition was increasing, an estimated 12 percent having completed oviposition.

Montana.^{1/} (August 3-9): The majority of the Mormon crickets in the infested areas in Beaverhead County were in the adult stage. In Big Horn County, in south-central Montana, migrations were sporadic and oviposition was well advanced excepting in the foothills of the Big Horn Mountains and in the Wolf Mountains, in which areas egg deposition was just beginning.

Wyoming.^{1/} (July 20-26): Heavy oviposition was reported in Hot Springs County, egg deposition occurring much nearer crop lands than in 1940. No migrations constituting a threat to crop lands occurred. Oviposition was general in Sheridan County but had not yet been noted in Crook County. (July 27-August 2): Migrations occurred during the week in the Kirby Creek area of Hot Springs County with some additional damage to crested wheat, corn, and small grains.

Idaho.^{1/} (July 27-August 2): Migrations of crickets took place in Clark County on Middle and Crooked Creeks during the week. The migration in Fremont County had changed its course and slowed down. Oviposition was practically completed in the lower counties of eastern Idaho.

Utah. G. F. Knowlton, et al. (August 2): Approximately 75 percent of the eggs have been laid in the Tooele, Junab, and Utah County areas, where remnants of small cricket bands can still be found. A Palnodes wasp has destroyed many in local areas.

California. C. C. Wilson (August 14): Outbreak reported in the Plumas National Forest. Infestation covers an area of approximately 480 acres in a mountainous section, ranging in elevation from 6,000 to 6,800 feet. Crickets ranged from less than 1 to 8 per square yard, probably averaging 2 per square yard. Oviposition was in progress on August 5, and examination of soil samples indicated an average density of 29 eggs per square yard. Crickets were more abundant around bitterbrush and big sagebrush, and marked feeding was observed on the crowns and roots of Poa sp., woolly mulesears, and nettleleaf horsemint.

EUROPEAN EARWIG (Forficula auricularia L.)

Massachusetts. A. I. Bourne (August 28): The first week of August we received a report, accompanied by specimens, of the occurrence of earwigs from the town of Marshfield, which represents a considerable expansion, along the shore line north of Plymouth, of the infestation which has been present in eastern Massachusetts.

Rhode Island. B. Eddy (August 28): Infestation of the European earwig was very heavy in Newport County and medium in Westerly.

Utah. G. F. Knowlton (August 2): Causing annoyance to persons at Farnington.

WHITE GRUBS (Phyllophaga spp.)

Vermont. H. L. Bailey (August 29): White grubs are very abundant. Report of especially bad damage to grass and strawberry plants at Waterbury, East Montpelier, central Vermont, and from Bakersfield, Franklin County, in the northwestern part of the State.

Massachusetts. E. P. Felt (August 15): Have caused considerable injury to lawns in Great Barrington and Egremont.

Massachusetts. A. I. Bourne (August 28): Late summer has been marked by an unusually large number of complaints of the presence of white grubs in lawns on private estates, golf greens, and even in mowing fields. Areas sampled showed a large population of grubs to the square foot. In many cases the grass roots were completely eaten away so that large areas of the sod could be rolled back like a carpet. In spite of this the rainfall in some sections of the State has been sufficient so that the sod had not been dried out.

Connecticut. J. P. Johnson (August 23): Injury reported as occurring on more turf than in the last several years at Sharon, Litchfield, Woodbridge, Bethany, Avon, Branford, Madison, and Mansfield.

New York. F. Z. Hartzell (August 26): Injury is quite widespread but most prevalent within a radius of 30 miles from Geneva.

Virginia. W. J. Schoene (August 5): P. ephilida Say specimens received from Lovington, Nelson County, with statement that they were found on an apple tree in great swarms, and that there were thousands of them. (Det. by E. A. Chapin.)

Kentucky. M. L. Didlake (August 26): White grubs, principally P. hirticul Knoch, severely injured a number of bluegrass pastures in Fayette County during July and early August.

JAPANESE BEETLE (Popillia japonica Newm.)

Massachusetts. A. I. Bourne (August 28): By the last week of July we received numerous reports of Japanese beetle being present in considerably greater abundance in this general section than was the case last year. Apparently conditions at the critical time last summer were very favorable for the deposition of eggs, and we have experienced the anticipated increase in beetle abundance this year.

Connecticut. J. P. Johnson (August 23): Foliage damage was considerably greater than in previous years. The insect is now appearing in more rural areas. On July 30 and 31 a considerable delayed emergence took place after rains. Number of beetles emerging was very noticeable as thousands were observed on golf courses and turf in parks.

Rhode Island. B. Eddy (August 28): Japanese beetle is 50 percent heavier this year and spreading somewhat to new areas.

New York. N. Y. State Coll. Agr. News Letter (August 4): This is the first year that commercial growers in Westchester County have had serious trouble with Japanese beetle affecting sweet corn. The beetle destroyed 85 percent of the raspberries. Reported that private estates did not harvest over 50 percent of blackberries owing to beetle damage. Both large and small estates, together with one known commercial fruit grower with 90 acres in the lower end of the county, are taking out their grapes and peach and plum trees on account of the crops being destroyed by beetles. Reported as occurring in small numbers in up-State counties.

Pennsylvania. B. F. Coon (August 9): Heavy population appears to be over, with females beginning their oviposition. Injury to some crops at Lancaster has been heavy, but due to early spring emergence, some crops are escaping serious injury.

Virginia. L. D. Anderson (August 20): Catch in 24 traps at the Virginia Truck Experiment Station stands at 12,026 to date, as compared with a total of 1,580 beetles caught during the 1940 season, an increase of 7.6 times. Beetles are now very scarce.

Illinois. C. C. Compton (August 23): New record of infestation found in Highland Park, Lake County, north of Chicago, and up to August 12 over 4,000 specimens had been taken in that vicinity. Scattered new infestations have also been noted in Chicago. The situation in East Saint Louis remains unchanged. Single specimen reported from Bloomington, which is a new record for central Illinois.

A WEEVIL (Calomycterus setarius Roelofs)

Connecticut. J. P. Johnson (August 23): Now occurs in at least 12 towns in Connecticut. Observed feeding on 41 species of plants to date, and favorite hosts seem to include many of the plants found in flower gardens and certain weeds. Reported as migrating into houses, a total of 2,400 being collected from 1 window well, while many others were observed in 2 other window wells of the same building.

New York. R. St. George (August 21): In the middle of July thousands of these weevils appeared in a frame house at Montauk Point, on Long Island. (Det. L. L. Buchanan.)

WHITE-FRINGED BEETLE (Pantomorus leucoloma Boh.)

Florida. L. J. Padgett (August 5): Two new infestations were reported from the Floral area.

A NITIDULID (Glischrochilus fasciatus Oliv.)

Illinois. C. L. Metcalf (August 23): Number of specimens submitted from De Kalb County, in northern Illinois, where they were found feeding extensively on the fruits of corn, beans, green peppers, tomatoes, and apples.

WIREWORMS (Elateridae)

North Dakota. J. A. Munro (August 22): Prairie grain wireworm, Ludius aereipennis Kby., is causing serious injury to potatoes in the Park River and Tando areas. Developing tubers in a field at Park River showed nearly 100-percent injury.

Utah. G. F. Knowlton (July 26): Adults of Hemicrepidius carbonatus Lec. are numerous and flying about east of Logan. (August 6): Wireworms are causing injury to sugar beets in a field at Lewiston.

California. M. W. Stone (August 19): From one to five sugar-beet wireworms, (Linonius californicus Mann.) were found feeding on interior of stems of drying lima bean plants in a field at Oxnard.

VARIEGATED CUTWORM (Peridroma margaritosa Haw.)

Minnesota. H. E. Milliron (August 13): Moderately abundant at Saint Paul and Minneapolis, feeding in the hearts of celery.

Wyoming. B. T. Snipes (August 1): Damage slight to alfalfa by P. margaritosa and Agrotis ypsilon Rott. in Evanston, Uinta County. (Det. by C. Heinrich.)

Utah. G. F. Knowlton (July 22): Damaging alfalfa in several localities in Carbon County. Many are pupating in Carbon County and in Emery County localities. (July 31): Severely injured many alfalfa fields at Grouse Creek. Many worms are now approaching maturity. (Det. by C. Heinrich.) (July 25): Damaging alfalfa in several Beaver County localities. (August 2): Causing moderately severe injury to lettuce, carrots, and cauliflower, as well as alfalfa, in areas north of Beaver. (August 5): Damaging approximately 600 acres of alfalfa in the Angle area of Piute County, and 40 acres at North Creek near Beaver, in Beaver County. (August 13): Damaged 50 acres of alfalfa at Lasal, in San Juan County.

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli Guen.)

Minnesota. H. E. Milliron (August 13): Moderately abundant on onion leaves in South Minneapolis. Occasionally on asparagus in same general localities.

Texas. W. C. Maxwell (August 14): Caused considerable damage to foliage of petunias, and buds of zinnias, and marigolds in a dooryard planting in Robstown, with such damage occurring over a period of several weeks. Also observed feeding on leaves and inside white bloom of cotton.

SOUTHERN ARMYWORM (Prodenia eridania Cram.)

Georgia. T. L. Bissell (August 4): Feeding lightly on velvetbeans at Sandersville, east-central Georgia.

GLASSY CUTWORM (Crymodes devastator Brace)

Maine. A. E. Brower (August): Heavy flight of moths at Augusta.

ARMYWORM (Cirphis unipuncta Haw.)

Virginia. L. D. Anderson (August 20): Several heavy infestations have appeared in grassy soybean and cornfields in the Norfolk area during the month.

Minnesota. M. W. Wing (August 20): Moderately abundant at Saint Cloud and Glenwood.

VELVETBEAN CATERPILLAR (Anticarsia gemmatilis Hbn.)

Georgia. T. L. Bissell (August 25): Caterpillars, probably this species, reported on peanuts at Savannah, on August 11.

Louisiana. C. O. Eddy (August 25): Reported in spots in a number of places in northern, central, and southern Louisiana.

BEEET WEBWORM (Loxostege sticticalis L.)

Utah. G. F. Knowlton (August 2): Attacking beets, gardens, and alfalfa in several northern Utah localities.

FALSE CHINCH BUG (Nysius ericae Schill.)

Utah. G. F. Knowlton (July 22): Nymphs abundant on Russian-thistle and other weeds around gardens at Manti. (July 27): Extremely abundant at Heber and in the Vernon Creek area. (August 3): Severely damaging alfalfa, peas, and turnips at North Creek near Beaver. (August 18): Very heavy population infesting a flower garden at Logan.

Wyoming. B. T. Snipes (July 29): Principal damage by the false chinch bug occurred in seed radish fields in the Big Horn Basin, Sheridan and Goshute Counties. Damage negligible, being 15 to 20 percent.

Arizona. C. D. Lebert (August 21): Bugs are coming off the desert by the millions and invading houses in the Camelback Resort Area at Phoenix. Observed in piles one inch deep around windows and doorsills of a residence, and also getting into houses by the thousands.

LEAF-CUTTER BEES (Megachile sp.)

Utah. G. F. Knowlton (August 24): The most damaging and extensive injury by leaf-cutter bees, ever observed by the writer, noticed today at Howell, in Box Elder County. Rose and Virginia creeper leaves were badly "riddled" by the bees, with some damage also evident to flowering almond, four-o'clocks, and snowberry bush foliage.

CEREAL AND FORAGE - CROP INSECTS

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

General. The Hessian fly situation is being published as a supplement to the Insect Pest Survey Bulletin, No. 6, August 15, 1941.

WHEAT JOINTWORMS (Harmolita spp.)

Ohio. T. H. Parks (August 26): At the conclusion of the wheat insect survey the jointworm (H. tritici Fitch) infestation varied from 1 to 22 percent in the 27 counties visited. Average percentage of straws infested was 8.1 percent, as compared with 8.7 percent in 1940. No serious loss occurred in any field. Wheat stems infested with H. vaginicola Doane were received from Morrow County, north-central Ohio, with statement that a field of wheat suffered almost total loss.

WHEAT STEM SAWFLY (Cephus cinctus Nort.)

Montana. H. B. Mills (August 25): Considerably more abundant on wheat in the northern tier of counties and in the triangle area north of Great Falls, Cascade County, than it has been for several years.

WHEAT HEAD ARMYWORM (Heliothecia albilinea Hbn.)

Michigan. E. I. McDaniel (August 15): Reported as very numerous in several places in Grand Traverse County.

CORN

EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)

Massachusetts. A. I. Bourne (August 28): The first brood of the European corn borer was very light throughout most of the State. Thus far, the second brood does not seem to be up to normal.

A. M. Vance (August): At a low level in early sweet corn in Middlesex County in 1941, where an average of only 0.2 borer per plant occurred in 25 fields examined.

Rhode Island. B. Eddy (August 28): Relatively light this year.

Connecticut. A. M. Vance (August): Much less abundant in early sweet corn near New Haven in 1941, where the average number of borers per plant in 25 surveyed fields was 1.1 as compared with 5 in 1940.

N. Turner (August 22): Much less abundant than usual in southern Connecticut. Very little infestation in some fields of late sweet corn. Eggs of the second generation appear in small numbers.

New York. L. A. Carruth (August 4): In the Hudson Valley, a few second-generation eggs have been laid although the rate of oviposition was low last week owing to weather conditions. In the Syracuse area our test piece averaged between 6 and 7 borers per plant in the untreated area. Apparently about 5 percent of the borers pupated in that area. A test field near Rochester showed nearly 10 borers per plant in the untreated area this week while one in Niagara County a week ago showed an infestation of about 16 borers per plant in the checks. A few scattered fields on Long Island showed some first-generation borer injury, although most of the early corn has been much cleaner than usual of all insect injury.

G. E. R. Hervey (July 28): In western New York, the situation appears to be about the same as last season. Infestation is rather general and varies in intensity in different fields. Observations show that the most serious infestations are in Niagara County. In one field in this area there is an average of about 15 borers per plant, which means practically a total loss. Borers are in all stages of growth. Found about 3 to 4 percent pupation of the first brood around Syracuse and just a trace of pupation in Niagara County.

New Jersey. A. M. Vance (1941): Early market sweet corn in western Burlington County more heavily infested than in 1940. In a survey of 29 of the earliest and most heavily infested fields in the same county, S. D. Carter found an average of 8.9 borers per plant in 1941, as compared with 5.1 in the same number of fields in that section in 1940. In 9, or 31 percent of the New Jersey fields, the corn was infested with from 11 to 19 borers per plant.

Ohio. T. H. Parks (August 26): Average populations up to 8 borers per stalk are being found in some of the most susceptible hybrid strains of corn. Some had transformed to the pupal stage by the middle of August, which will result in numbers of second-brood moths by September. Infestation over northwestern Ohio is somewhat lighter than in 1940.

A. M. Vance (1941): Early market sweet corn in the vicinity of Toledo more heavily infested than in 1940. At Toledo, the average number of borers per plant in 25 fields of early sweet corn in 1941 was 12.4 in comparison with 5 in 1940. In 15, or 60 percent of the fields examined, the corn contained 10 to 18 borers per plant. One of the fields observed near Toledo averaged 31 borers per plant and another 25.

Illinois. C. C. Compton (August 23): Two-brooded form has shown a marked increase in the area around Wichert in Kankakee County, and Des Plaines in Cook County. Most of the larvae had pupated by the end of the first week in August, and in many cases second-brood moths had emerged.

Michigan. A. M. Vance (1941): Five fields of sweet corn near Erie averaged 10.7 borers per plant.

CORN EAR WORM (Heliiothis arnigera Hbn.)

- New York. N. Y. State Coll. Agr. News Letter (August): In eastern New York in Westchester County, the corn ear worm was causing damage of about 10 percent on August 4, and in western Suffolk County on August 11 it was increasing in numbers, being present in the tips of the corn, and mainly in the young larval stages. In western New York larvae were just beginning to appear in Erie County on August 19.
- Maryland. C. Graham (July 30): Present at Bel Air and Towson on corn plantings.
- L. P. Ditman (July and August): Moths increasing generally in sweet corn fields.
- Ohio. E. W. Mendenhall (August 28): Corn ear worms are quite general in sweet corn and causing considerable damage.
- Missouri. H. B. Brown (August 29): Sweet corn maturing August 7-16 was 32-percent infested. Some damage, not serious, has been noted to tomatoes.
- Minnesota. A. G. Ruggles, et al. (August): Moderately abundant on sweet corn on August 12, and during the latter part of July in Saint Paul and Minneapolis.
- Nebraska. O. S. Bare (August 13): Reported as damaging beans in Garden County and tomatoes in York and Merrick Counties on July 19 and August 5. Also reported as being numerous and damaging corn and tomatoes in Lancaster County during the period from July 16 to August 13.
- Texas. K. P. Ewing et al. (July 26): At Riesel, in McLennan County, 3,600 ears of corn inspected showed an average of 54.6 emergence holes per 100 ears. (August 2): Out of 3,600 ears of corn inspected the average was 75 holes per 100 ears.
- Montana. D. J. Plotsch (August 20): Rather general infestation on corn at Helena, Bozeman, and Billings.
- Utah. G. F. Knowlton (July 25): Attacking field corn ears, and have damaged most tassels. (July 29): Very destructive in sweet corn. All untreated patches heavily infested. Infesting 25 percent of the field corn examined at Roy. (July 31): One hundred percent of the ears of corn examined in a patch at Logan were infested. (August 2): All sweet corn examined at Logan, Hyrum, and Wellsville, was infested by the corn ear worm, usually more than one larvae being present per ear. (August 4): Seriously attacking sweet corn at Pleasant Grove and Orem, and damaging sweet and field corn at Grantsville. (August 12): Injury has lessened generally during the last 10 days, although large percentages of the sweet corn are still infested. (August 23): Damaging sweet corn at Mendon, and 70 percent of the ears infested in a patch examined east of Murray.

FALL ARMYWORM (Laphygma frugiperda A. & S.)

Maryland. L. P. Ditman (August): Attacking curl of corn at Beltsville.

Virginia. L. A. Hetrick (August 25): Completely ruined a field of corn planted about July 15 at Williamsburg.

Georgia. T. L. Bissell (August 12): Damaging late corn in Spalding County. (August 25): Few worms found in pods of pimiento pepper.

Mississippi. C. Lyle, et al. (August 23): Reported as damaging late corn in Lafayette and Marshall Counties and in the Meridian territory. Found to be very numerous on the ears of late corn in some fields in Oktibbeha County on August 21.

Louisiana. C. O. Eddy (August 25): The grass worm, together with two or three other caterpillars, has almost totally destroyed some late corn.

Tennessee. G. M. Bentley (August 25): Causing considerable damage to Sudan grass, millet, and soybeans in Hamilton and Bedford Counties.

SOUTHWESTERN CORN BORER (Diatraea grandiosella Dyar)

Oklahoma. R. G. Dahms (August 22): Caused severe damage in some cornfields in southwestern Oklahoma. Observations show that fields in northern Caddo County have been the most heavily infested.

F. E. Whitehead (August 23): Reported as causing severe injury in the vicinity of Lookeba in Caddo County, and Alva in Woods County.

STALK BORER (Papaipema nebris nitela Guen.)

Illinois. C. L. Metcalf (August 23): Appears to be unusually common in northeastern Illinois, infesting corn, hollyhocks, dahlias, and other garden plants.

Minnesota. M. W. Wing (August 20): Moderately abundant on potato at Mountain Lake and Le Center.

H. E. Milliron (August 13): Scarce in the stalks of sweet corn at Saint Paul and Minneapolis.

CHINCH BUG (Blissus leucopterus Say)

Missouri. P. C. Stone (August 29): Chinch bugs are present in most areas. The second brood is causing injury to corn in the west-central part of the State, and a combination of drought and bugs will cut down the corn yield considerably in places in northern Missouri. The majority of the second-generation bugs in the central part of the State are now in the third and fourth instars, although some have reached the adult stage.

Kansas. W. T. Emery (July 17): Flights to row crops have been conspicuous in the Big Blue River Valley of Riley County. Weather conditions necessitated replanting of corn and sorghum crops in this area, and early in July a heavy infestation of winged chinch bugs was found destroying the young corn and sorghum plants in the more sandy soils, several acres in extent, while the larger parts of the fields were in general thoroughly infested. First-instar bugs had begun to appear by July 17.

Oklahoma. R. G. Dahms (August 22): Second generation is very abundant on sorghums in the southwestern part of the State. Infestation reached a peak too late to kill many sorghum plants, but they are causing severe shriveling of the grain in some late-planted fields.

CORN LEAF APHID (Aphis maidis Fitch)

Ohio. T. H. Parks (August 26): Infestations are local and spotted, but are not as serious generally as last year.

Utah. G. F. Knowlton (August 4): Attacking some corn plants at Grantsville

A PLANT BUG (Chlorochroa uhleri Stal)

North Dakota. J. A. Munro (August 22): Cornfields examined in the Hague and Strasburg vicinities in Emmons County on August 14 were infested at the rate of about 11 bugs per corn plant. In the southwestern counties the insect is very scarce as compared with last year, the reduction evidently being due to a tachinid parasite which was present in about 80 percent of the bugs in this area. Parasites were not encountered in the Hague and Strasburg vicinities.

CORN ROOTWORMS (Diabrotica spp.)

Kentucky. M. L. Didlake (August 26): Southern corn rootworm (D. duodecimpunctata F.) damaged corn at Marion on August 8.

Nebraska. O. S. Bare (August 13): Adults of the northern corn rootworm (D. longicornis Say) were received from Wayne County on August 12. Reported as causing serious damage to corn.

A SYRPHID (Mesogramma politum Say)

Illinois. C. L. Metcalf (August 23): A serious infestation of field corn in Douglas County, east-central Illinois, in August, 252 larvae of all sizes and a few pupae having been collected from the tassels and topmost 5 leaves of a single stalk of corn. This sporadic insect has taken on new significance with the development of the hybrid-corn industry. The larvae eat the pollen and suck sap from the superficial cells in the axils of the leaves, and in this instance they were especially abundant on a particular variety being grown for the pollination, artificially, of hybrids. So much of the pollen was destroyed that the crop was practically useless for pollination purposes.

A SILK BEETLE (Luperodes sp.)

Louisiana. C. O. Eddy (July 24): Abundant in north-central Louisiana since about June 10. Small numbers of the adults are parasitized by the fly Amedoria luctuosa Meig.

ALFALFA

PEA APHID (Macrosiphum pisi Kltb.)

Utah. G. F. Knowlton (July 17): Less abundant than they were a few weeks ago on alfalfa and peas throughout northern part of the State. (August 2): Only moderately abundant to scarce in most northern Utah alfalfa fields examined recently.

ALFALFA CATERPILLAR (Colias eurythone Bdv.)

Arizona. F. H. Parker (August 22): Adults flying over and between alfalfa fields in the Salt River Valley in immense numbers. Motorists annoyed by cars overheating due to butterflies lodged on radiators.

Utah. G. F. Knowlton (August 5): Butterflies very abundant around alfalfa fields at Grantsville. (August 7): Butterflies flying in moderate abundance over alfalfa fields at Howell. (August 12): Butterflies are abundant at Mantua in and around alfalfa fields.

California. A. E. Michelbacher (August 25): Serious outbreak in the north-eastern part of the San Joaquin Valley. In one field the number of larvae collected to the 100 sweeps of an insect net exceeded 12,000. The field was first examined on July 29, and at this time a very few of the larvae were infested with a wilt disease. On August 2, 75 percent of the larvae had been killed by the wilt, and the remainder were infested. On August 6 the number of larvae collected to the 100 sweeps was only 10. Wilt disease was present in nearly all the infested fields and was a very important factor in reducing damage. The larval parasite Apanteles flaviconchae Riley was slow in developing; however, by

August 6 most of the small alfalfa butterfly larvae in most of the fields were parasitized. The percentage of larvae parasitized in many fields exceeded 80 percent. On August 14, in some fields, the number of small larvae parasitized reached nearly 100 percent. In the north-western portion of the San Joaquin Valley there was no large second generation of alfalfa weevil. Highest larval population encountered in any field was found on July 3. In this field 250 larvae were collected per 100 net sweeps. In most fields the number collected was less than 100.

LESPEDeza

OBSOLETE BANDED STRAWBERRY LEAF ROLLER (Cacoccia obsoletana Walk.)

Virginia. W. J. Schoene (July 26): Reported causing serious injury at Heathsville in eastern Virginia. (Det. by J. F. G. Clarke.)

COWPEAS

WEEVILS (Chalcodermus spp.)

Georgia. T. L. Bissell (August 4): C. aeneus Boh. reported as light at Sandersville. (August 5): C. collaris Horn adults were present on Chamaecrista fasciculata planted as border row between wood and fields at Midville, southeastern Georgia. No pods present.

A LEAF-BEETLE (Andrector ruficornis Oliv.)

Arizona. C. D. Lebert (August 25): Severe defoliation of a block of cowpeas in the northeastern Phoenix area. (Det. by F. H. Parker.)

SESBA

A WEEVIL (Eudiagogus rosenchoeldi Fahr.)

Arkansas. D. Isely (August 25): Caused considerable damage to Sesbania which was grown as soil improving crop in Lincoln County.

SORGHUM

SORGHUM WEEWORM (Celana sorghiella Riley)

Texas. W. C. Maxwell (August 14): Caused considerable damage to the grain sorghum crop in Haines County, with damage being particularly severe on the late part of the early feed crop. Pyroderces rileyi Wlsm. have been found in some of the heads of mature maize previously damaged by this insect.

R. K. Fletcher (August 26): Present on hogari in Lavaca and De Witt Counties on August 8.

RICE STINK BUG (Solubea pugnax F.)

Oklahoma. R. G. Dahms (August 22): Very abundant on sorghum heads in Comanche County. In some fields 100 percent of the heads are infested and there are often 40 or more bugs on one head. (Det. H. G. Barber.)

SUGARCANE

SUGARCANE BORER (Diatraea saccharalis F.)

Louisiana. A. L. Dugas (August 25): Infestation is generally heavy as compared with the last few years. Severe injury is becoming apparent in a number of localized areas in the southern part of the cane area. Natural parasitism by Trichogramma is very high.

F R U I T I N S E C T S

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica soror Lec.)

California. A. E. Michelbacher (August 25): Extremely abundant at Brentwood and caused serious damage to ripening deciduous fruits. As many as 3,000 beetles were collected on a single tree, and the average number per tree in some orchards exceeded 1,500.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

South Carolina. J. A. Berly (August 22): Quite often observed at Clemson and is injurious to Photinia.

Mississippi. C. Lyle, et al. (August 23): Heavy infestations have been observed on untreated trees in the Meridian territory.

WHITE PEACH SCALE (Aulacaspis pentagona Targ.)

Virginia. L. D. Anderson (August 20): Reported as present on lilac, privet, mulberry, peach, and other host plants at Norfolk.

North Carolina. C. S. Brimley (August 22): Becoming more numerous on privet hedges at Raleigh and damage is often severe.

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

Maine. Maine Agr. Exp. Sta. (July): Infestation light, but evidence of increasing infestation late in July in orchards at Monmouth, Kennebec County.

New York. N. Y. State Coll. Agr. News Letter (August 4): In eastern New York, significant numbers of second-brood moths in bait traps and new larval entrances are being found daily. In western New York at Geneva second-brood larvae well started and gaining momentum each warm day. (August 9): Moths continue to emerge at a steady rate and the bait catch today was the largest to date for the second brood. These conditions are typical of all zones.

Virginia. A. M. Woodside (August 23): Infestation has increased rapidly in most orchards in Augusta County. Hatching of second-brood eggs is over. Heavier infestation than during the same period for several years.

Ohio. T. H. Parks (August 26): Larvae have been troublesome since early in August in a few "problem" orchards, where the regular sprays have not controlled. There has been a heavy second brood of moths.

Indiana. L. F. Steiner (August 6): Bait trap catches during the last week at Vincennes have gradually increased with the largest catches of the season now occurring in one orchard. There has been a noticeable increase in new injuries in most orchards during the last 2 days and today's population count showed an increase of five times over last week's moth population. (August 21): Moth catches in traps on favorable nights are still heavy at Vincennes. Several treated orchards in southwestern Indiana have from 50 to 90 percent of the crop injured.

Illinois. S. C. Chandler (August 23): Third brood in southern and western Illinois is on the decline, with fewer new entrances. Many orchards over the territory have a very severe infestation, up to 50 percent of the fruit being infested.

Kentucky. L. F. Steiner (August 21): Several treated orchards in northern Kentucky have been injured from 50 to 90 percent.

Missouri. L. Haseman (August 29): Throughout Missouri growers who have used a full schedule of sprays have been able to control first- and second-brood larvae quite successfully, but the dry weather in August, particularly in the southern part of the State, has been very favorable to the pest.

Washington. C. C. Alexander (August 18): Summer-brood moth emergence increased late in July on apple and pear at Yakima, and apparently reached a peak on August 16-17. Egg deposition increased during August.

EYE-SPOTTED BUDMOTH (Spilonota ocellana D. & S.)

New York. F. Z. Hartzell (August 26): Continues to be abundant in the Apple Belt on the south shore of Lake Ontario. Serious injury on untreated trees.

Washington. F. W. Carlson (August 18): Adults taken in baits at Yakima. (Det. by E. J. Newcomer.)

OBLIQUE-BANDED LEAF ROLLER (Cacoecia rosaceana Harr.)

Washington. F. W. Carlson (August 18): Adults taken in codling moth bait at Yakima. (Det. by E. J. Newcomer.)

HAG MOTH (Phobetrus pithocium A. & S.)

Maine. H. B. Peirson (August): A few full-grown larvae were found feeding on apple foliage in Gardiner. Starting spinning cocoons on August 26. First record of this insect in Maine.

APPLE MAGGOT (Rhagoletis pomonella Walsh)

New York. N. Y. State Coll. Agr. News Letter (August 4): In Clinton County injury is severe in a few totally neglected plots of trees. Oviposition started not later than July 10. Flies are noted occasionally.

APPLE APHID (Aphis pomi Deg.)

New York. N. Y. State Coll. Agr. News Letter (July 28): In western New York, in Niagara County, aphids appear to be on the wane although they are still serious on uncared for apples. In Monroe County on the increase again near the lake.

WOOLLY APPLE APHID (Eriosoma lanigerum Hausn.)

New York. N. Y. State Coll. Agr. News Letter (August 11): In western New York, several growers have complained of this aphid defoliating trees. A close check-up this summer indicated that leaf yellowing and drop occurs at this time, correlating with a build-up of woolly aphids on inner parts of the tree. However, trees showing very few woolly aphids also have the leaf drop, and indications are that the trees showing yellowing and drop are those having infestations of the green aphid (Aphis pomi Deg.) earlier and that the woolly aphid is being blamed for the damage caused by a combination of green aphids, treatment, and possibly summer oil build-up.

Mississippi. C. Lyle (August 23): Reported as injuring apple trees in Montgomery County on July 26.

COMSTOCK'S MEALYBUG (Pseudococcus comstocki Kuw.)

Virginia. A. M. Woodside (August 24): Few adults in an orchard near Staunton, Augusta County, where there was a light infestation last year.

Ohio. G. J. Macussler (August 21): Adult females of the second generation are very abundant in two apple orchards at Proctorville in Lawrence County. Some are still feeding, large numbers are migrating in search of oviposition quarters, others are ovipositing. Eggs of the third generation are already abundant and the hatch has just started. The young nymphs are still in the egg masses and have not yet begun to feed. A considerable amount of injury in the form of sooty mold and mealybug egg masses is present on the fruit. Parasitization is extremely low, only two cocoons of mealybug parasites being found in the two orchards. A very severe infestation of this mealybug is present

on honeysuckle growing along a fence adjacent to one of the orchards.

Virginia. G. J. Haeussler (August): In Albemarle County adult females of the second generation have been very abundant throughout most of the month in some orchards. In several other orchards of the county the infestation appears to have decreased considerably. Deposition of the third brood of eggs has been under way since July 31. These began to hatch about August 17. First-stage nymphs of the third generation were first observed outside the egg masses and feeding on August 26. In some orchards a considerable amount of damage is present on the fruit and in a few instances the more heavily infested trees are losing their foliage. Parasitization by Clausenia purpurea Ishii has shown an appreciable increase on the second generation of the host in this county. The introduced Japanese parasite, Allotropa sp., is building up very rapidly in several orchards of Albemarle and Clark Counties.

South Carolina. W. M. Upholt (August 27): At Clemson a mirid, identified by H. G. Barber as Eurychilopterella luridula Reut., is very plentiful among egg masses of P. constocki on apple, and appears to be effecting appreciable control.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Massachusetts. A. I. Bourne (August 28): The season has been marked by a scarcity of the European red mite.

Connecticut. P. Gorman (August 20): Scarce in most apple orchards in New Haven County; doing considerable damage in a few.

Ohio. T. H. Parks (August 26): Quite serious in some northeastern orchards and especially in untreated sections.

Washington. E. J. Newcomer (August 18): Becoming common on apple in Yakima although it was scarce earlier in the season.

PACIFIC MITE (Tetranychus pacificus McG.)

Washington. E. J. Newcomer (August 18): Becoming serious enough in some apple orchards at Yakima and Wenatchee to warrant control measures.

PEACH

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Connecticut. P. Gorman (August 20): Less abundant on peaches generally than last year.

New York. N. Y. State Coll. Agr. News Letter (July 28): In Ulster County, in eastern New York, as high as 40 percent injury has occurred on early peaches and much tip injury is present. Third-brood larvae are beginning to appear. (August 1): In western New York, the second-brood

larvae have reached maturity and left the twigs. This brood confined its activity largely to twig feeding. Parasitism of the second brood has been high.

Virginia. A. M. Woodside (August 23): Infestation on peach fruit reported as light in Augusta County, and moderate in Rockingham County.

W. J. Schoene (August 15): Caused serious injury to commercial peach orchards in Buckingham, Nottoway, and Brunswick Counties, wormy fruit ranging from 15 to 50 percent. Most serious injury ever experienced in that section.

Georgia. O. I. Snapp (August 7): Infestation at Fort Valley in central Georgia is lighter than last year. Of 4,306 ripe Elberta peaches cut and carefully examined, only 17, or 0.39 percent, were found to be infested. These peaches were harvested from an untreated commercial orchard near Fort Valley. Absence of a host for the maturity of the hibernating broods of larvae is responsible for the light infestations.

T. L. Bissell (August 12): Heavily infested peach trees at Griffin, a great percentage of the terminals being killed.

Mississippi. C. Lyle, et al. (August 23): Reported as injuring peach twigs in Bolivar and Coahoma Counties, and damage reported from the Jackson, Meridian, and northwestern territories, as well as from Monroe County.

Louisiana. C. O. Eddy (August 25): Extremely numerous in northeastern, central, and southern Louisiana.

Ohio. T. H. Parks (August 26): Newly harvested Elberta peaches show less infestation than for several years. Even the earliest maturing fruits bore very few blemishes.

Indiana. L. F. Steiner (July 23): Very light infestation at Vincennes.

Illinois. C. C. Compton (August 23): Very few present in southern Illinois. Reported that there were only 3 wormy peaches out of a total of 1,500 examined at Belleville, and less than .25 percent to 2 percent injury in three orchards examined in Calhoun County during the week ended August 23.

S. C. Chandler (August 23): Harvest counts in orchards over the peach area of southern Illinois show the lowest infestation in several years.

Missouri. L. Easeman (August 29): Oriental fruit moths have been seen in central Missouri and an increasing number of them have been caught in bait jars. On August 27 some peaches were showing full-grown larvae.

PEACH BORER (Conopia exitiosa Say)

New York. N. Y. State Coll. Agr. News Letter (August 4): At Geneva adults have been emerging for several weeks. Egg laying has begun and entries of newly hatched larvae can be found.

BUCK MOTH (Herileuca maia Drury)

Texas. W. C. Maxwell (August 26): Larvae defoliated a peach tree near Robstown, in Mueces County, then moved to an elm tree nearby.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Virginia. W. J. Schoene (August 15): Caused some injury to peach orchards in Buckingham, Nottoway, and Brunswick Counties.

A. M. Woodside (August 23): Few first-brood females deposited eggs in Albemarle County. Most of the larvae from eggs deposited in insectary have left fruit.

Georgia. O. I. Snapp (August 13): Seventy-one percent of the new beetles started to deposit second-generation eggs at Fort Valley by the end of the peach harvest, which is more than that of any of the last 5 years. Second-brood larval infestation was heavier than that of an average year, and caused considerable damage to the peach crop. Adult population in central Georgia orchards will be heavier than that of an average year owing to emergence of second-generation adults.

Mississippi. C. Lyle, et al. (August 23): Heavy damage has occurred on untreated and late varieties of peaches and plums.

Kentucky. M. L. Didlake (August 26): Second generation is unusually abundant. As high as 50-percent infestation of Elberta peaches reported in western Kentucky.

Ohio. T. H. Parks (August 26): Larvae have been more abundant in early maturing peaches than for several seasons. Beetles were reported present in a few commercial plum orchards.

Illinois. S. C. Chandler (August 23): Larval infestation over the peach area of southern Illinois is lighter than it has been for several years.

Missouri. L. Haseman (August 20): During August peaches in central Missouri have shown a light infestation. Larvae are from one-half grown to fully grown.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Mississippi. C. Lyle, et al. (August 23): Reported as injuring a number of peach trees in Hinds County.

Louisiana. C. O. Eddy (August 25): Reported as being unusually abundant in northern Louisiana on peaches.

Missouri. L. Haseman (August 29): Peach and apple trees, dying from the effect of the November freeze of 1940, are showing extremely heavy infestation of shot-hole borer.

A BEETLE (Blapstinus rufipes Casey)

California. C. K. Fisher (August): Heavily infested pile of peach pits in a fallow field in Fresno County, great numbers of the insects being present 2 or 3 inches beneath the dry surface of the pile. Fallen peaches and figs nearby also attacked.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

New York. N. Y. State Coll. Agr. News Letter (August 11): In Orleans County tremendous numbers of eggs present and flies still active.

Washington. J. F. Cooper (August 8): Adults taken from property near Ellensburg, Kittitas County. (Det. by P. W. Oman.)

Oregon. J. F. Cooper (August 27): Specimen collected in Umatilla County. (Det. by P. W. Oman.)

PEAR SLUG (Caliroa cerasi L.)

Utah. G. F. Knowlton (August 23): Injuring hawthorne foliage at Coalville in Summit County.

Wyoming. E. T. Snipes (August 6): Damage to nursery stock pear and plum trees at Casper and Cheyenne by the pear slug has been slight.

CURRENT

CURRENT FRUITFLY (Epochra canadensis Loew)

Utah. G. F. Knowlton (August 14): Infested 18 percent of the black currants on bushes examined at Hooper.

GRAPE

GRAPE LEAFHOPPER (Erythroneura comae Say)

New York. F. Z. Hartzell (August 26): Much less numerous in Chautauqua and Erie Grape Belt than last year.

Tennessee. G. M. Bentley (August 25): Second brood was doing considerable damage in a large vineyard in Sevier County on August 11.

Nebraska. O. S. Bare (August 13): Infestations were reported on wild grape in Sheridan County on July 16 and on woodbine in Wheeler County on August 6.

Texas. W. C. Maxwell (August 14): Very numerous with apparent damage on some of the grapes in Robstown, in Nueces County. More numerous on domestic grapes than on the native grape, the so-called Mustang grape even when the two kinds were growing on the same arbor.

R. K. Fletcher (July 25): Present on grapes in Nolan County.

Wyoming. B. T. Snipes (August 1): Heavy populations of the woodbine leaf hopper on woodbine are causing serious damage and death in some cases to the vines in the vicinity of Powell in Park County.

GRAPE BERRY MOTH (Polychrosis viteana Clem.)

New York. F. Z. Hartzell (August 26): More abundant than in 1940 and very serious in most of the Grape Belt in the Chautauqua and Erie areas.

Ohio. T. H. Parks (August 26): Injury is very severe in a large Franklin County vineyard, and second-brood eggs were hatching in large numbers near Sandusky in mid-August.

GRAPE LEAF FOLDER (Desmia funeralis Hbn.)

Missouri. L. Haseman (August 20): The grape leaf roller is occurring in some vineyards and on wild grape and Virginia creeper foliage in central Missouri. The larvae vary from newly hatched to half-grown or larger.

Texas. W. C. Maxwell (August 14): Grape arbors in Robstown, Nueces County have been considerably damaged, the damage to the native grape being more severe than that on the domestic grapes.

PECAN

APHIDS (Aphididae)

Texas. C. B. Nickels and W. C. Pierce (August 15): Monellia costalis Fitt. and Melanocallis caryaefoliae Davis have been abundant on most of the pecan trees in central Texas for the past month.

TWIG GIRDLER (Oncideres cingulatus Say)

Florida. A. N. Tissot (August 27): First report of season received from Felda on August 4. Insect was cutting branches of pecan.

PECAN BUDMOTH (Gretchena bolliana Sling.)

Texas. C. B. Nickels and W. C. Pierce (August 14): Estimated that 50 per cent of the buds had been destroyed on small pecan trees in two large nurseries at Arlington. Injury occurred between April and July.

CITRUS

CALIFORNIA RED SCALE (Aonidiella aurantii Mask.)

California. R. S. Woglum (August): Considerable natural mortality of red scale this spring in most areas, which more than counterbalanced the tendency toward scale increase from an open winter and lack of treatment. Crawlers appeared in numbers in May with hatching intermittently since, which is now leading to build-up in many orchards. Such build-up is much more noticeable in interior areas than toward the coast and especially in orchards on higher elevations where natural mortality has been least and scale increase most rapid. Scale is severe in only occasional orchards, but there are many, especially in the interior, with widespread infestations.

BLACK SCALE (Saissetia oleae Bern.)

California. R. S. Woglum (August): Generally lighter than last year, and most prevalent in the area from Ontario to Redlands and to a lesser degree in the San Fernando Valley. In the coastal area heavy infestations still remain few and far between, especially in the double-brooded area, but there are some groves where the scale has been developing very rapidly.

FLORIDA RED SCALE (Chrysomphalus aonidum L.)

Florida. M. D. Leonard (August 1): Considerable sized tract of "Pineapple" oranges at Mount Dora was heavily infested.

PURPLE SCALE (Lepidosaphes beckii Newm.)

California. R. S. Woglum (August): Continues to be the major problem in many orange groves in Orange County and to some extent in the Whittier-Rivera-Downey area of Los Angeles County.

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

Texas. W. C. Maxwell (August 14): Present on a tangerine and a Ponderosa lemon in a dooryard planting in Robstown, with infestation being rather heavy on parts of each tree. Numerous larvae of a coccinellid are feeding on the scale. An adult Redolia cardinalis Muls. was found on the ground beneath one of the infested trees, and it is likely that the coccinellid larvae are of this species.

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Florida. M. D. Leonard (August 3): Fair infestation occurred recently in a large citrus grove on Merrit Island.

Mississippi. C. Lyle, et al. (August 23): Very abundant on privet hedge plants in the southwestern part of the State.

CITRUS RUST MITE (Phyllocoptes oleivorus Ashm.)

Florida. M. D. Leonard (July 27): Reported as quite active on citrus in some sections of Brevard County last week. (August 3): Heavy infestations on citrus in Lake County.

SIX-SPOTTED MITE (Tetranychus sexmaculatus Riley)

Florida. M. D. Leonard (August 3): Heavy rains have caused a considerable decrease on citrus at Davenport.

MANGO

RHINOCEROS BEETLE (Dynastes titus L.)

Florida. A. N. Tissot (August 27): Adults reported as feeding on mango fruits at Mico and causing fruit to fall from the tree. Beetles feed voraciously on ripe mangoes in the laboratory.

T R U C K - C R O P I N S E C T S

BLISTER BEETLES (Meloidae)

Massachusetts. A. I. Bourne (August 28): Black blister beetles (Epicauta pennsylvanica Deg.) were beginning to be conspicuous the first week of August on asters, gladiolus, and other late summer and early fall flowering plants.

Rhode Island. B. Eddy (August 28): Margined blister beetle, (E. marginata F.) is rather heavy in beets and Compositae, and E. pennsylvanica is heavy on goldenrod throughout the State.

Virginia. L. D. Anderson (August 20): Several species of blister beetles are numerous and causing some damage to tomato plants and many ornamentals in the Norfolk area.

Georgia. T. L. Dissell (August 13): E. marginata present on tomatoes and other crops.

Florida. A. N. Tissot (August 27): Striped blister beetles (E. vittata F.) were severely damaging eggplant at Seffner on August 8.

Mississippi. C. Lyle, et al. (August 23): Blister beetles have damaged beans in Copiah and Lincoln Counties, and garden plants in Clay and Tippah Counties. Specimens of E. marginata were received from Coahoma County on August 8 where they were found on cotton. Specimens of E. lorniscata F. were taken from tomato plants in Oktibbeha County on August 13. This species continues injurious in the northeastern counties, but are not nearly so numerous as they were in June and July.

Tennessee. G. M. Bentley (August 25): E. pennsylvanica and E. vittata are occurring on potatoes, tomatoes, cowpeas, and soybeans.

L. B. Scott (August 20): Macrobasis unicolor Kby. and E. vittata adults are unusually abundant on weeds and garden crops in the north-central part of the State.

Ohio. E. W. Mendenhall (August 14): E. pennsylvanica are abundant on dahlia plants.

Nebraska. O. S. Dare (August 13): Blister beetles found on tomato vines were submitted from Saline County on August 1. Also reported from Lancaster County during the period from July 16 to August 13.

Utah. G. F. Knowlton (August 5): E. maculata Say is abundant on alfalfa field margin at Grantsville.

CUCUMBER BEETLES (Diabrotica spp.)

Mississippi. C. Lytle, et al. (August 23): Some damage to late beans and cucumbers by D. vittata F. and to late melons by D. duodecimpunctata F. was observed in the Meridian area.

Louisiana. E. H. Floyd (August 20): D. duodecimpunctata, D. vittata, and D. balteata Lec. have severely damaged summer squash around Baton Rouge.

Ohio. H. F. Howard (August 23): Grower of tomatoes in a greenhouse reported that D. vittata was injuring recently set-out plants.

Illinois. C. C. Compton (August 23): D. duodecimpunctata is more numerous than it has been for some time over the northern half of the State. Specimens unusually abundant on flowering crops, such as aster, where fields of an acre or more will average 5 to 7 adults per flower.

Minnesota. H. E. Milliron (August 13): D. duodecimpunctata is moderately abundant on cucumber and squash at Saint Paul and Minneapolis.

A. G. Ruggles, et al. (August 13): D. vittata very abundant. Bacterial wilt of cucurbits has been fairly common on cucumbers and muskmelons where the beetle was present.

Utah. J. F. Parrish (August 13): Reported that D. vittata has destroyed 50 acres of melons and cucumbers in Grand County during 1940.

GARDEN FLEA HOPPER (Halticus citri Ashm.)

Virginia. A. M. Woodside (August 15): Common on weeds and clover in orchards, and causing serious damage in some of the orchards. Infestations observed are pretty well scattered over Augusta and Rockingham Counties.

L. D. Anderson (August 20): All stages have been very abundant in several flower gardens, and have been especially abundant and injurious on verberna, hollyhocks, and mint in the Norfolk area.

Mississippi. C. Lyle, et al. (August 23): Specimens were taken from tomato plants in Holmes County on July 25.

Missouri. L. Haseman (August 14): An epidemic noted at Columbia on corn, beans, and cucumbers the last two and one-half weeks.

Texas. R. K. Fletcher (August 26): General over lower Rio Grande Valley on July 27, attacking tomato and eggplant seed beds.

SIX-SPOTTED LEAFHOPPER (Macrosteles divinus Uhl.)

Minnesota. H. E. Milliron (August 13): Generally very abundant, especially on carrots, parsnips, celery, beets, and other garden crops, and on various weeds on muck and peat soils around Minneapolis and Saint Paul.

A COREID (Euthochtha galeator F.)

Ohio. Mrs. R. T. Lowerre (August 18): Specimens taken from roses, beets, corn, and beans, were submitted from Macedonia on August 14.

NORTHERN MOLE CRICKET (Gryllotalpa hexadactyla Perty)

Nebraska. O. S. Bare (August 13): Specimens received from Garden County on August 9.

GARDEN CENTIPEDE (Scutigera immaculata Newp.)

Idaho. J. R. Douglass (August 11): Reported as destroying stands of cucumbers in Twin Falls.

Utah. G. F. Knowlton (August 12): Damaged table beets and turnips, and caused poor germination and stand of many plants seeded in a garden at Plain City, Weber County. (August 18): Reported as causing a serious condition in Utah County gardens.

POTATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

New York. N. Y. State Coll. Agr. News Letter (July 28): On Long Island grubs were heavily infesting eggplants. Adults were seen mating and it seems as if this may be a second-generation infestation.

Minnesota. A. G. Ruggles, et al. (August): Very abundant at Barnum, in Carlton County, at Belgrade, in Stearns County, and at Long Prairie, in Todd County. Reported as moderately abundant generally. The population is mostly adults which frequently migrate to late potatoes or eggplant.

Utah. G. F. Knowlton (August 2): Reported as causing injury in the small infested area in northern Utah.

Washington. B. J. Landis (August 1-15): Adults, larvae, and eggs observed on potato at Prosser, Granger, Boone, Zillah, Wapato, and Harrah, with some damage noted at Prosser. Larvae were being fed upon by the pentatomid Perillus bioculatus F.

FLEA BEETLES (Epitrix spp.)

Mississippi. C. Lyle, et al. (August 23): Specimens of E. parvula F. and E. cucumeris Harr. were taken from tomato plants in Holmes County on July 25 and 28.

Minnesota. A. G. Ruggles, et al. (July 30): E. cucumeris is very abundant at Barnum.

Utah. G. F. Knowlton, et al. (August 5): Western potato flea beetle (E. subcrinita Lec.) is causing damage to potato foliage at Richfield and Glenwood, in Sevier County. (August 8): Generally more injury occurring in Sevier County, and potato foliage was being damaged on a ranch west of Snowville, in Box Elder County.

Washington. B. J. Landis (August 15): E. subcrinita and E. cucumeris are abundant and causing considerable damage to potatoes at Wapato, Toppenish, Harrah, and as far east as Prosser. Adults of both species were observed feeding on foliage of potato, tomato, eggplant, and peppers.

HORNWORMS (Protoparce spp.)

Maine. A. E. Brower (August): Larvae of the tomato worm are infesting tomatoes around Augusta.

Mississippi. C. Lyle, et al. (August 23): Specimens of the tomato worm (P. sexta Johan.) have been taken from tomato plants in Holmes, Lauderdale, Monroe, Oktibbeha, Pearl River, and Stone Counties, as many as 14 specimens being collected in a single locality. Parasitized specimens (probably this species) were also reported from Monroe County on August 5.

Missouri. A. C. Burrill (July 22): First specimens of P. quinquenaculata Haw. seen on four-o'clocks and petunias at Jefferson City.

Utah. G. F. Knowlton (July 28): Tomato hornworm is defoliating a few tomato and potato plants at Caineville.

Washington. B. J. Landis (August 1): Larvae of P. quinquenaculata were found occasionally on tomato and potato at Union Gap and Harrah.

E. J. Newcomer (July): P. sexta was quite common on tomatoes at Yakima.

POTATO LEAFHOPPER (Empoasca fabae Harr.)

New York. N. Y. State Coll. Agr. News Letter (July 28): On Long Island leafhoppers on potatoes have multiplied to such an extent that considerable damage has been caused in some fields. (August 4): In Saratoga County a small planting of potatoes had the heaviest infestation ever observed by the reporter. In western New York, leafhoppers are rapidly increasing in numbers in the Tully section of Cortland County. (August 11): Numerous in Wayne and Orleans Counties, and serious tipburn observed in the latter county.

Minnesota. A. G. Ruggles, et al. (August 13): Very abundant on potatoes, beans, and similar crops in Saint Paul and Minneapolis, causing severe tipburn in untreated areas. Very abundant at Lake Park, in Becker County, and at Hinckley, in Pine County.

A LEAFHOPPER (Empoasca filanota DeL.)

Utah. G. F. Knowlton (August 5): Damaging potato foliage at Richfield and Elsinore.

POTATO PSYLLID (Paratrioza cockerelli Sulc)

Wyoming. B. T. Snipes (July 30): Heavy damage by the potato psyllid (Paratrioza cockerelli Sulc) has occurred in untreated potato fields in Park, Goshon, and Sheridan Counties.

APHIDS (Aphididae)

Connecticut. N. Turner (August 22): Macrosiphum solanifolii Ashm. appear to be more numerous on tomatoes than usual. Reported as causing serious damage in some instances.

New York. N. Y. State Coll. Agr. News Letter (August 19): On Long Island there was very little aphid migration from such crops as potatoes during the week of July 7, and when they began moving to smaller vegetables during the week of July 14, diseases had already begun to thin their ranks. By July 20 it was difficult to find live specimens on potatoes. On August 12 the populations on some tomato fields on Staten Island were still rather high. In Wayne County, western New York, aphids were numerous in some spots on August 11.

Utah. G. F. Knowlton (August 2): Myzus persicae Sulz. is moderately abundant on potatoes examined at Logan, and an occasional plant was heavily infested. (August 24): M. persicae was moderately abundant on mosaic infected potatoes at Howell.

BEANS

MEXICAN BEAN BEETLE (Epilachna varivestis Muls.)

- Maine. Maine Agr. Exp. Sta. (July): Generally numerous on beans, with moderate injury in Oxford County, moderate to severe injury in Cumberland County, and severe in York County.
- Rhode Island. B. Eddy (August 28): Heavy in string and pole beans throughout Washington County.
- New York. N. Y. State Coll. Agr. News Letter (August 4): In eastern New York, a few straggling larvae, many pupae, and a few first-generation adults were observed in Saratoga County on July 31. Injury by the first-brood larvae has been more severe generally this season on field beans than for average years. (August 11): Eggs are hatching in western Suffolk County. Adults are quite numerous and have done some damage to late-planted beans. (August 4): In western New York, adults from the first brood of larvae have been emerging since July 20 in the early planted fields (May 24) of Steuben County. Pupation of the first brood began in all except the fields planted around June 26. Beetles are much more numerous in Cayuga County than in previous years, and many larvae and a few of the new brood of adults were found within 5 miles of Lake Ontario for the first time.
- (August 11): Second brood adults present in small numbers in Wayne County.
- Virginia. L. D. Anderson (August 20): Damage to beans in the Norfolk area has been greatly reduced by the extreme hot, dry weather which killed many of the eggs, larvae, pupae, and adults during July.
- Georgia. O. I. Snapp (August 8): Infestation at Fort Valley, in central Georgia, is now heavy and seriously injuring lima beans and snap beans in a number of gardens.
- T. Thompson (August 16): Caused heavy damage to late lima beans at Thomasville.
- Mississippi. C. Lyle, et al. (August 23): Specimens received from Oktibbeha County. Reported as damaging beans and lima beans in Chickasaw, Hinds, Smith, and Yalobusha Counties, in the Meridian area, and and in the northeastern counties.
- Tennessee. G. M. Bentley (July 28): Reported as doing considerable damage in several counties.
- Ohio. N. F. Howard (August 23): Larvae, but not eggs, were killed by hot weather during first half of August at Columbus, according to J. Patton.
- E. W. Mendenhall (August 14): Quite bad generally in untreated areas and some bean patches are totally destroyed.

Utah. G. F. Knowlton, et al. (August 11): Injury is severe at Castle Dale, Green River, Emery, and Ferron, in Emery County, and at Price and Wellington, in Carbon County. Plants in some home gardens have been almost completely destroyed. (August 13): Caused serious injury and is still damaging beans at Moab, Castleton, and Spanish Fork Valley areas of Grand County.

RED SPIDERS (Tetranychus spp.)

Virginia. L. D. Anderson (August 20): Red spiders have caused considerable injury in several lima bean fields on the Eastern Shore of Virginia.

Ohio. N. F. Howard (August 4): Specimens of T. telarius L. and T. atlanticus McG. were found on garden bean at Columbus, on July 31, and submitted with statement that mites moved over to beans from red clover.

California. R. E. Campbell (July 22): T. telarius reported as heavily infesting lima beans at San Juan Capistrano. (Det. by E. A. McGregor.)

PEAS

PEA APHID (Macrosiphum pisi Kltb.)

Idaho. J. R. Douglass (July 30): Reported as damaging peas grown for seed in the upper Snake River Valley.

CABBAGE

IMPORTED CABBAGE WORM (Pieris rapae L.)

Connecticut. N. Turner (August 22): Much less abundant than usual on late cabbage in southern Connecticut.

Rhode Island. B. Eddy (August 28): Relatively light in Washington County.

Missouri. L. Haseman (August 29): Since the middle part of August, there has been a rather severe infestation of the imported cabbage worm in central Missouri. August 26 there were a few butterflies on the wing and the larvae on cabbage were almost ready to pupate.

Minnesota. H. E. Milliron (August 13): Damaging cabbage, cauliflower, and rape in Minneapolis and Saint Paul.

Utah. G. F. Knowlton (July 25): Butterflies abundant at Clover and Millville. (July 28): Injuring cabbage at Riverdale. Butterflies are abundant at Clinton and Hooper. (August 7): Large numbers of butterflies are flying over alfalfa fields at Howell. (August 13): Butterflies are abundant at Mantua and Syracuse.

Washington. B. J. Landis (August 15): Adults, eggs, and young larvae are very abundant on cabbage in small gardens at Union Gap.

CABBAGE LOOPER (Autographa brassicae Riley)

Connecticut. N. Turner (August 22): Much less abundant on late cabbage than usual in southern Connecticut.

Missouri. L. Hasenan (August 29): Since the middle part of August, there has been a rather severe infestation of the cabbage looper in central Missouri. On August 26 the loopers were small to half grown.

Minnesota. H. E. Milliron (August 13): Damaging cabbage, cauliflower, and rape in Minneapolis and Saint Paul.

DIAMONDBACK MOTH (Plutella maculipennis Curt.)

Minnesota. H. E. Milliron (August 13): Moderately abundant at Saint Paul and Minneapolis on cabbage, cauliflower, and horseradish.

Washington. B. J. Landis (August 15): Larvae and pupae were observed on cabbage near Granger.

ZEBRA CATERPILLAR (Ceramica picta Herr.)

Minnesota. H. E. Milliron (August 13): Occurring on cauliflower at Saint Paul, the damage to leaves by clusters of young larvae being especially apparent.

CABBAGE MAGGOT (Hylomya brassicae Bouche)

Minnesota. H. E. Milliron (August 13): Moderately abundant at Saint Paul and Minneapolis. On upland soil, very severe infestations have been noted on cabbage, rutabagas, and turnips, rendering many of the crops unmarketable.

HARLEQUIN BUG (Hargantia histrionica Hahn)

South Carolina. O. L. Cartwright (August 14): Both adults and nymphs, as many as 8 to 10, present on bunches of grapes and feeding on the fruit, at Clemson. Bugs congregated on just a few vines.

Georgia. T. L. Bissoll (August 24): On collards at Cartersville.

Florida. A. M. Tissot (August 27): Reported as injuring cabbage, collards, and turnips at Chipley on August 15.

Mississippi. C. Lyle, et al. (August 23): Damage observed on collards in the Meridian area.

Missouri. H. E. Brown (August 28): First noticed at Columbia, August 15, feeding on kale and broccoli. So far little damage has been done but eggs and nymphs are abundant and control measures would be justified.

STRIPED FLEA BEETLE (Phyllotreta vittata F.)

Virginia. L. D. Anderson (August 20): Caused severe injury in many recently planted kale fields in the Norfolk area.

SQUASH

SQUASH BUG (Anasa tristis Deg.)

Maine. Maine Agr. Exp. Sta. (July): Numerous on squash, and causing moderate injury at Fryeburg in Oxford County.

New York. N. Y. State Coll. Agr. News Letter (July 28): In eastern New York, bugs are active and ovipositing. In western New York, many colonies were reported as hatching in Orleans County, but as rather scarce in Monroe County. Adults are quite generally parasitized, but in spite of this quite a few eggs were laid. Egg masses seem less abundant and nymphs are present only in rather limited numbers. (August 4): Present in Monroe County, but older ones are so heavily parasitized that very little injury is expected.

Maryland. L. P. Ditman (August): Considerable injury observed during the last two years on squash, gourd, and melons in Prince Georges County.

Mississippi. C. Lyle, et al. (August 23): Caused damage to late plantings of summer squash in the Meridian area.

Louisiana. E. E. Floyd (August 20): Beginning to show up in squashes around Baton Rouge.

Minnesota. H. E. Milliron (August 13): Moderately abundant generally; very abundant in restricted fields in Minneapolis and Saint Paul (and south). Early damage to squash usually consists of wilting of entire plant. Approximately 30 percent of plants lost where population is very abundant. General infestation appears to be the heaviest on record in this area.

Nebraska. O. S. Fare (August 13): Reported from Holt County on August 11.

Utah. G. F. Knowlton, et al. (August): Reported as damaging squash in all localities throughout much of northern Utah, at Grantsville, Garland, and Logan; moderate to severe damage reported in parts of Grand County.

Washington. E. J. Landis (August 15): Eggs, nymphs, and adults are moderately abundant at Granger, Doone, Union Gap, and Yakima, and are causing much concern to growers of squash and field pumpkin.

MELONS

MELON APHID (Aphis gossypii Glov.)

Louisiana. E. H. Floyd (August 21): Abundant on summer squash.

Minnesota. H. E. Milliron (August 13): Generally moderate to very abundant at Minneapolis and Saint Paul. Injurious infestations noted on muskmelons and cucumbers since the latter part of July. Lighter infestations have been encountered on squash.

Nebraska. O. S. Dare (August 13): Reported on cucumber vines in Holt County on July 22.

Utah. G. F. Knowlton (August): Reported as severely damaging some cantaloups at Green River on August 11. Injury is usually confined to a few plants in each infestation.

ASPARAGUS BEETLE (Crioceris asparagi L.)

New York. N. Y. State Coll. Agr. News Letter (July 28): In Monroe County feeding has been heavy, and fields show considerable injury.

Minnesota. H. E. Milliron (August 13): Moderately abundant generally around north and south Minneapolis. Very abundant in some localities. Almost complete destruction of large acreages of mature asparagus has been noted where no control measures were used. Tetrastichus asparagi Crawford was moderately abundant.

Utah. G. F. Knowlton (August 20): Damaging asparagus at Hooper, Syracuse, and Logan.

CARROT

CARROT RUST FLY (Psila rosae F.)

New York. N. Y. State Coll. Agr. News Letter (July 28): In Monroe County injury is being found on some early market sand-grown carrots. This is unusual. (August 11): Flies of the second brood started emerging July 31 and came out rapidly for a few days. Less numerous early this week.

CARROT WEEVIL (Listronotus latiusculus Boh.)

Nebraska. O. S. Dare (August 13): Infested carrots were submitted from Richardson County on July 21.

BLACK SWALLOWTAIL (Papilio polyxenes F.)

Maine. H. D. Peirson (August 26): Small number of nearly full-grown larvae were found feeding on foliage of carrots.

ONIONS

ONION MAGGOT (Eulimneria antiqua Meig.)

Minnesota. H. E. Milliron (August 13): Moderately abundant generally at Minneapolis and Saint Paul; very abundant on upland soils in certain localities to the north. Average loss probably does not exceed 5 percent.

ONION THRIPS (Thrips tabaci Lind.)

Minnesota. H. E. Milliron (August 13): Very abundant throughout the season in Minneapolis and Saint Paul. Blasting especially noticeable on sweet Spanish onion in July and August.

Utah. G. F. Knowlton (August 2): Causing moderate injury to onions at Logan.

RADISHES

APHIDS (Aphidae)

Wyoming. D. T. Snipes (August 11): Severe attack by Myzus persicae Sulz and Rhopalosiphum pseudo-brassicarum Davis, starting the last week in July, was suffered by 1,000 acres of seed radishes. In some cases 25-percent damage had occurred within 5 days after first reports of the pest. Populations were extremely heavy.

PARSNIP

PARSNIP WEEWORM (Depressaria heracliana Deg.)

New York. N. Y. State Coll. Agr. News Letter (July 28): Quite extensive damage to parsnips has occurred in plantings near Hicksville in eastern New York. Larvae started eating in the crowns about June 25.

SWEETPOTATO

ARGUS TORTOISE BEETLE (Chelymorpha cassidea F.)

Florida. A. N. Tissot (August 27): Seriously damaging sweetpotato vines being grown as an ornamental at Saint Augustine, on July 19.

Mississippi. C. Lyle, et al. (August 23): Damaged some leaves of sweetpotato in Choctaw and Webster Counties.

SWEETPOTATO SAWFLY (Sterictiphora cellularis Say)

Mississippi. C. Lyle, et al. (August 23): Adults and larvae collected from sweetpotatoes in Pearl River County where they were defoliating the plants.

BEEETS

BEEET LEAFHOPPER (Eutettix tenellus Dak.)

Utah. G. F. Knowlton (July 28): Much less curly top caused in Weber and Box Elder Counties than at this time last year. (August 13): Only 2 to 5 percent of the tomato plants examined at Clearfield and Slater-ville have been killed by curly-top.

SPINACH LEAF MINER (Pegomya hyoscyani Panz.)

Ohio. T. H. Parks (August 26): Caused serious damage to a few fields in Putnam County, northwestern Ohio.

Minnesota. H. E. Milliron (August 13): One heavy infestation on spinach at Saint Paul.

PEPPER

PEPPER WEEVIL (Anthonomus eugenii Cano)

Arizona. C. D. Lebert (August 25): Heavy infestation of the pepper weevil in a pepper field in northeastern Phoenix. Adults are abundant. (Det. by C. D. Lebert.)

TOBACCO

HORNWORMS (Protoparce spp.)

Pennsylvania. D. F. Coon (August 9): Emergence of first-generation adults of P. quinquemaculata Haw. on tobacco started on August 1 at Lancaster and has steadily increased to date. By trap records this date is 14 days earlier than in 1940.

Tennessee. L. B. Scott (August 20): P. sexta Johan. and P. quinquemaculata have been much less than normally abundant during the entire season in the north-central part of the State.

TOBACCO FLEA BEETLE (Epitrix parvula F.)

Tennessee. L. B. Scott (August 20): Caused moderate damage to tobacco in the north-central part of the State.

C O T T O N I N S E C T S

BOLL WEEVIL (Anthonomus grandis Boh.)

South Carolina. F. F. Bondy, et al. (August 2): Situation remains acute in Florence County even though there are no squares left on the majority of the cotton. Young bolls are being attacked, and in some fields half-grown bolls are almost covered with punctures. More numerous than they have ever been in this part of the State. Where the cotton is still fruiting, it is safe to say that 100 percent of the squares are punctured where no treatment has been applied. (August 23): Not as numerous in the fields in Florence County as they were last week.

Georgia. P. M. Gilmer, et al. (July 26): Increased considerably in untreated fields in Tift, Berrien, and Turner Counties during the week. Migration of the earlier section of the midsummer (second) brood is now well established, although little new oviposition has yet shown up. Infestation increase during the week has been largely due to later emerging members of the first seasonal brood. Early members of the migrating brood began to appear in considerable numbers about July 23, being distinctly noticeable about edges of fields, where teneral and newly emerged weevils were quite common in blooms. First brood movement has been the heaviest noted at Tifton in six seasons. Many untreated fields of Upland cotton are now showing close to 80 to 100 percent of squares infested. (August 16): Peak of migratory movement for the second section has passed during this week in Tift and Berrien Counties. Season has unquestionably been the most disastrous from weevil standpoint since the '20's. (August 23): Movement is somewhat decreased in Tift, Berrien, and Lowndes Counties, but still occurring in sufficient numbers to require the usual treatment on sea island. (August 2): Heavy damage continues in Lowndes and Echols Counties. Infestation is as high as 49.0 percent, the highest for last week being 26.6 percent.

O. I. Snapp (August 13): Infestation at Fort Valley, in central Georgia, is heavier than that of an average year.

Florida. C. S. Rude and A. J. Rogers (August 23): Forty fields were examined in Gilchrist, Alachua, Marion, and Lake Counties; the infestations ranging from 0 to 79.5 percent. Weevil is beginning to appear in fields in the southern part of Lake County.

Mississippi. C. Lyle, et al. (August 23): Reported from Choctaw, Hinds, Leflore, Pike, and Yazoo Counties. Very heavy general infestation reported over the State where cotton is grown, and where the plants have stopped fruiting, large bolls are being attacked.

E. W. Dunnam, et al. (August 23): Very plentiful in most fields in Washington County. As many as 500 weevils were collected by a planter on the end plants of a few rows of cotton.

Louisiana. R. C. Gaines, et al. (August 23): During the week there were 575 weevils collected on field flight screens in Madison Parish, as compared with 80 in 1940 and 227 in 1939. Practically all of the young bolls in untreated cotton have been ruined and many of the larger bolls severely injured.

Arkansas. D. Isely (August 25): Caused considerable loss over all of the cotton-producing part of Arkansas except about eight counties in the northeastern part into which the infestations have extended.

Oklahoma. F. E. Whitehead (August 23): Appears to be the most serious it has been in a number of years. Present in large numbers over the southeastern and eastern parts of the Oklahoma Cotton Belt.

Texas. F. L. Thomas (August 20): Infestation increased during the last week, and weevils are damaging a large percentage of the squares and young bolls in unprotected cotton.

K. P. Ewing, et al. (August 2): Two thousand squares were inspected in two untreated prairie fields in the McLennan, Limestone, and Falls Counties area, with an average of 29.95 percent punctured squares, the range being from 10.4 to 49.5 percent.

W. C. Maxwell (August 14): Infestation is general throughout the Coastal Bend Section, with severe damage being done in many fields. Three and 4 adults are readily found in many of the squares and white blooms, with some of the bolls having as many as 30 punctures. Heavy infestation has destroyed only a small acreage in Jim Wells and Nueces Counties. All of the fruit on cotton in an experimental plot, one-fourth acre in size, of sea-island cotton in Kleberg County, was destroyed. (August 26): Infestation in Nueces County continues with much damage in many fields.

C. O. Gingrass (August 20): Injury is heavy because of the late maturing cotton crop at Edinburg, Hidalgo County. Half-grown bolls were stung.

COTTON LEAF WORM (Alabama argillacea Hbn.)

Georgia. W. G. Williams (August 23): Only a few specimens have been found in Lowndes and Echols Counties.

Florida. C. S. Rude and A. J. Rogers (August 23): Present in most fields and in a few places have become numerous enough to do considerable damage.

Mississippi. C. Lyle, et al. (August 23): First reported in Sunflower County the latter part of July, and soon after from Oktibbeha County. Also reported from Humphreys, Leflore, and Marshall Counties. Light infestations generally have been reported from the northern two-thirds of the State and from Lawrence County farther south.

E. W. Dunnam, et al. (August 9): Scattered in most cotton fields in Washington County. One field of about 4 acres was observed as being severely ragged. Reported that some of the insects are in the pupal stage.

Tennessee. G. M. Bentley (August 12 and 17): Appeared for first time in small amounts in Dyer, McNairy, and Tipton Counties.

Louisiana. R. C. Gaines, et al. (August 2): Reported as very abundant in southwestern Louisiana, and as far west as Welsh. Specimens ranging in size from second instar to about the fifth instar were found near Tallulah on July 30, and in a field near Wisner on August 1. Infestations also reported from Baskin, Shreveport, and Monroe, and as numerous at Ruston.

R. W. Harned (August 20): Reported as present in the vicinity of Church Point, and as far north as Opelousas.

I. J. Bechel (August 25): Severely stripping cotton of its foliage at Shreveport. Infestation has been relatively earlier and very generally distributed over the State.

Arkansas. D. Isely (August 25): Outbreak appears more extensive than that of any previous year, as far as records of this Department indicate. Reported as present in counties scattered over all the State except a group of cotton-producing counties along the western part of the Arkansas River Valley. Injury appears to be most severe along the southern border of the State.

Missouri. L. Hasenon (August 14): Heavy outbreak reported at Poplar Bluff in southeastern Missouri, on August 9. Believed to be the first report of a serious infestation from any of the southeastern counties, although a week ago a moth was taken in a bait jar at Cape Girardeau.

Oklahoma. C. F. Stiles (August 18): Quite generally distributed over the southern two-thirds of the State. Reported as far north as Poteau and Muskogee on the east side of the State and in the vicinity of Chickasha on the west side of the State. Many of the larvae were full grown on August 16, and a few millers have already emerged in the southeastern portion of the State.

Texas. F. L. Thomas (August 13): New brood is now active and laying eggs. Considerable ragging has been reported from most sections of the State (August 20): More leafworms have been observed during the last week in central Texas than at any time this season. Eggs and all size larvae were noted in many fields. Severe ragging has been noticed in untreated cotton.

K. P. Ewing, et al. (August 2): Found in many fields in the vicinity of Waco and damaging infestations have been found in several fields in McLennan, Limestone, and Falls Counties. Many larvae were found on August 1 on a farm 3 miles west of Crawford, and certain parts of the

field were almost defoliated. (August 16): Generally distributed throughout the McLennan, Limestone, and Falls Counties area. In some untreated fields the cotton has been almost completely stripped, and many fields have been ragged considerably.

C. R. Parencia, et al. (August 9): Moths were observed in most fields during the last few days of the week in Calhoun County. Leafworms were appearing in a few fields of young cotton in sufficient numbers to warrant control measures.

W. C. Maxwell (August 26): Infestation in Nueces County continues general although light. Some of the fields with the more succulent growth have shown some damage during the last few days. (August 14): Infestation is general throughout the Coastal Bend Section, with some fields being partially defoliated. Most specimens are in the pupal stage.

C. O. Gingrass (August 20): Seriously damaged cotton crop at Edinburg, Hidalgo County, owing to late planting. Bolls were not matured and will be seriously damaged by defoliation.

L. W. Noble (August 2): First appearance was noted on July 29 in the Presidio Valley. Light infestations are occurring generally throughout the Valley. (August 16): Infestation is general, but damage has been very light.

New Mexico. R. W. Harned (August 20): Present in lower Pecos Valley during the week ended August 12.

Arizona. W. A. Stevenson (August 23): First specimens found at Marana, Pima County, on August 20. Few small larvae found in several fields at Sahuarita, 20 miles south of Tucson. Very light infestation generally in the Tucson district.

BOLLWORM (Heliothis armigera Hbn.)

South Carolina. F. F. Bondy, et al. (August 23): Found in nearly all fields in Florence County, but very little damage is being done.

Georgia. T. L. Bissell (August 6): Larvae damaging squares in Bulloch County, southeastern Georgia. (August 25): Severe damage in one field reported at Americus.

P. M. Gilmer, et al. (August 23): Very serious damage all over the State. Some fields show 20 to 30 percent damage on younger bolls. Third successive year of serious damage.

O. I. Snapp (August 13): Reported destroying bolls at Cochran, in central Georgia.

Florida. C. S. Rude (August 23): Seriously damaging crop of sea-island cotton in Marion, Alachua, and Gilchrist Counties, and reports of serious damage are coming in from other sections. Appeared in large numbers within the last 2 weeks. Very light infestation in Lake County as compared with a serious infestation last season.

A. N. Tissot (August 27): Very numerous and causing much damage in Alachua, Hamilton, Marion, and Washington Counties.

Mississippi. C. Lyle, et al. (August 23): Larvae from cotton have been received from Coahoma, Leflore, Neshoba, and Tallahatchie Counties, and damage has been reported from Lawrence County and the Meridian area.

E. W. Dunnam, et al. (August 23): Causing great concern throughout the Delta; 30 to 50 percent boll damage reported in spotted infestations.

Louisiana. I. J. Beemel (August 25): Has built up beyond control in many fields in the Shreveport and Red River Valley area in northwestern Louisiana. Counts during the last week have shown infestations as high as 85 percent. Large bolls are severely damaged.

Oklahoma. C. F. Stiles (August 18): Reported as worst infestation ever seen by the writer in Bryan and McCurtain Counties, where as much as 50 percent of the squares and young bolls in some fields are damaged.

Texas. F. L. Thomas (August 6): Causing severe damage throughout the greater part of the State. One-third to nearly all of the squares and bolls on plants in many fields in the central blackland area have been destroyed. Eggs and young larvae are still prevalent. (August 13): Damage is appearing along coastal areas.

K. P. Ewing, et al. (August 2): Tremendous increase of eggs and larvae during the week, and enormous amount of damage has been reported throughout the McLennan, Limestone, and Falls Counties area. Several fields were inspected in Limestone County on August 1, close to Mart and Thornton, where larvae had done a great deal of damage. One 200-acre field of fairly old cotton showed approximately 80 percent of the forms injured, with most of the larvae nearly full grown. Remainder of the bolls on the plants will no doubt be stripped before the larvae mature. Similar damage reported from the vicinity of Georgetown and Granger. While there are scattered infestations of large larvae in many fields around Waco, most of the infestation in this immediate vicinity consists of eggs and newly hatched larvae.

C. R. Parencia, et al. (August 23): Continue to do damage in fields of young succulent cotton. Several fields observed were severely damaged.

L. W. Noble (August 23): Found in all fields visited around Presidio but damage has not been as great as in previous years.

W. C. Maxwell (August 14): Infestation rather severe in many fields in Nueces County. Reported as being more numerous than for several years.

Arizona. W. A. Stevenson (August 9): Found in every field in the Marana section, Pima County, but infestation is not considered serious.

CABBAGE LOOPER (Autographa brassicae Riley)

Texas. W. C. Maxwell (August 14): A few specimens of A. brassicae have been observed on leaves of cotton in Nueces County although they were not numerous enough to cause any damage. Reported as doing some damage to cotton in Nueces County in 1940.

COTTON LEAF PERFORATOR (Bucculatrix thurberiella Busck)

Texas. W. C. Maxwell (August 26): Present in many of the cottonfields of Nueces County since about August 10. Some damage has been done with many of the stalks around the edges of the fields showing a ragged condition near the top of the stalk. Pupation occurring on the base of the plant and on debris around base of the stalks. Adults now very numerous with many being observed on the screens and even in residences.

R. K. Fletcher (August 26): Present on cotton in Nueces County on August 11.

COTTON FLEA HOPPER (Psallus seriatus Reut.)

Oklahoma. C. F. Stiles (August 18): Reported as only about 50 percent as severe as it was 2 weeks ago. Considerable migration into the fields.

Texas. K. P. Ewing, et al. (August 23): No particular injury noted, but insect is still present in McLennan, Limestone, and Falls Counties area.

W. C. Maxwell (August 14): Few specimens can still be found in cottonfields in Nueces County, but infestation is very light.

Arizona. W. A. Stevenson (August 9): No specimens found on cotton in Pima County, but a maximum of 420 being collected per 100 net strokes on croton.

APHIDS (Aphididae)

South Carolina. F. F. Bondy, et al. (August 2): More numerous than during any year for some time. Untreated cotton in almost any field is covered with honeydew. Many untreated fields are more severely infested with leaf aphids than the average treated field is most seasons.

Georgia. P. M. Gilmer, et al. (August 9): Aphids are increasing rapidly in Tift and Berrien Counties. Treated cotton is very heavily infested and all cotton carries a fairly heavy infestation. (August 23): Aphids are still very high on treated fields in Tift, Berrien, and Lowndes Counties, most of which are showing serious defoliation due to aphid damage. Slightly less in numbers on the sea-island plot series than during the previous week, owing to heavy rains.

T. L. Bissell (August 25): Aphis gossypii Glov. continues to be injurious in the area west of Atlanta. Reported on August 18 as damaging from one-third to one-half of a crop at Dallas.

O. I. Snapp (August 8): A. gossypii is very abundant in some fields of cotton at Fort Valley, in central Georgia, and is causing considerable defoliation.

Florida. C. S. Rude and A. J. Rogers (August 23): Aphids are present in most fields in the sea-island-growing section, and in many they are causing some damage. Predators and parasites have increased in a few cases. Treated fields are heavily infested.

Mississippi. C. Lyle, et al. (August 23): A. gossypii reported from Bolivar, Holmes, Madison, Montgomery, Panola, and Yalobusha Counties. Infestations were heavy on treated cotton in the southwestern counties, the Meridian area, and Rankin County, and light in the Grenada territory and the northeastern counties.

R. L. McGarr, et al. (August 16): Very bad in some of the treated areas at State College.

Louisiana. R. C. Gaines, et al. (August 2): Aphids increased in both treated and untreated plots. Population is heavy in some of the untreated plots in Madison Parish and very heavy in many plots which have been treated. (August 9): Aphids have increased in most plots in Madison Parish, regardless of treatment. (August 16): Aphids increased in most plots during the week, and infestations were present in both treated and untreated plots in Madison Parish. (August 23): Infestation appears to be about the same as a week ago in Madison Parish.

I. J. Becnel (August 25): Cotton aphid has built up in tremendous numbers in the Red River Valley section and has caused excessive defoliation in several fields.

Arkansas. D. Isely (August 25): A. gossypii has caused injury following treatment for the boll weevil in localities scattered over the greater part of the State. No extensive injury.

Texas. K. P. Ewing, et al. (August 16): Rather a distinct and widespread increase of aphids throughout the McLennan, Limestone, and Falls Counties section during the week. Aphid infestation borders on damage point in many treated fields and may be found in fairly large numbers

in some untreated fields.

C. R. Parencia, et al. (August 23): Aphids increased in most fields of cotton in Calhoun County. Many of the leaves have a curled appearance and bottom leaves are being shed. Many open bolls are covered with honeydew.

W. C. Maxwell (August 14): Aphids are present in many of the cotton fields in Nueces County, with some of the infestations being very heavy. Predators, in particular, and parasites, are very noticeable. Reported that honeydew is very bad on some treated fields.

Arizona. W. A. Stevenson (August 23): Still present in large numbers in practically all cotton fields in the Marana section, in Pima County. Infestation has been very persistent and no parasites have been present. Heavy infestation is confined to the Marana section.

RAPID PLANT BUG (Adelphocoris rapidus Say)

Florida. C. S. Rude and A. J. Rogers (August 2): Causing serious damage in two fields in the sea-island belt.

Texas. K. P. Ewing, et al. (August 9): Continuing to do damage in some fields in McLennan, Limestone, and Falls Counties.

TARNISHED PLANT BUG (Lygus pratensis oblineatus Say)

Arizona. W. A. Stevenson (August 9): Causing commercial damage in a field of cotton south of Tucson, in Pima County.

WHITEFLIES (Aleyrodidae)

Mississippi. E. W. Dunnan (August 2): Increasing and doing as much damage to cotton plants in some fields in Washington County as aphids, which have increased rapidly in all fields. (August 16): Causing a great deal of damage to cotton in some fields in Washington County. Infestations are more spotted than those of aphids. (August 23): Whiteflies are causing serious damage in scattered locations in Washington County.

A MEALYBUG (Phenacoccus cevalliae Skll.)

Arizona. J. L. E. Lauderdale (August 7): Severe infestation on cotton in the Laveen area. Ladybird beetles are also numerous.

FOREST AND SHADE-TREE INSECTS

GYPSY MOTH (Porthetria dispar L.)

General. A. F. Burgess (August 2): Indications are that there will be a marked reduction from the total reported for last year in the number of acres of woodland showing from slight to complete defoliation in Maine and New Hampshire. In Massachusetts there has been a decided increase over that recorded for 1940. The few towns examined in Connecticut show no defoliation, with the exception of a very few white oak trees located in a group of towns in the extreme southeastern corner of the State. There has been a slight increase over last year in the amount of defoliation in Rhode Island. One infestation has been found in South Canaan and one in Salem Townships, in Wayne County, Pa. At the South Canaan infestation the bulk of egg clusters were found on a large willow tree where 1,300 egg clusters had been treated up until July 30. The infestation at Salem is located in a group of 9 old apple trees with large cavities and otherwise in poor condition.

FALL WEBWORM (Hyphantria cunea Drury)

Vermont. H. L. Bailey (August 29): Generally abundant throughout the State.

Massachusetts. A. I. Bourne (August 28): Somewhat more abundant generally over the State than last year. Particularly true in the eastern part of the State.

Rhode Island. B. Eddy (August 28): Rather heavy throughout the State.

Maryland. G. Myers (August 30): More abundant on my farm just east of Rockville, Montgomery County, than at any time for 5 years. One small apple tree has been completely defoliated.

Virginia. A. M. Woodside (August 23): Very common on walnut in Augusta, Rockbridge, Buchanan, and Highland Counties. Also observed on plum, cherry, hickory, and ash. Larvae now half grown to full grown.

Ohio. E. W. Mondenhall (August 11): Quite bad on wild cherry, willow, and apple trees, in central and southern Ohio, especially on old neglected apple trees.

Missouri. A. C. Burrill (July 23): Injury present on elm at Jefferson City.

Mississippi. C. Lyle, et al. (August 23): Much less numerous in the Grenada territory than last year and only a few colonies have been observed on hickory, persimmon, and pecan trees.

Texas. W. C. Maxwell (August 14): Reported reinfesting mulberry trees on some property in Robstown. This place was heavily infested earlier and it is believed that the present infestation is a new generation, possibly the second. Trees involved put on new foliage during the interim between infestations.

BROWN-TAIL MOTH (Mygma phacorrhoca Donovan.)

Maine and New Hampshire. A. F. Burgess (July 22): Decided increase in infestation in sections of Maine and New Hampshire. Several reports have been received this year, as compared with only a very few records of any defoliation last year. Complete defoliation of many orchards reported, particularly where no cutting of webs was done during the winter of 1940-41. In some towns it was so intensive that notable flights of moths were reported, a condition which has not been reported for a number of years.

SADDLED PROMINENT (Heterocampa guttivitta Walk.)

New Hampshire. J. V. Schaffner, Jr. (August 26): During the week of August 4 observations were made by aeroplane of the extent of infestation in the forests in the area near North Conway. It was estimated that probably 4,000 acres were 90 percent defoliated, and as many or more showed a defoliation of 30 percent. Beech trees were fed upon most severely; also fed on sugar maple and birches. Severe infestations were observed on the east side of Mote Mountain, the west side of White Horse and Cathedral Ledges, both sides of Attitash, some on Table Mountain, Bartlett Haystack, and Iron Mountain, in Jackson, and some on Thorn Mountain and on the northwest slope of Keersarge and Bartlett.

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

North Carolina. C. H. Hoffmann (August 4): Specimens received during late July and early August. Reported as killing small arborvitae trees at Asheville.

Mississippi. C. Lyle, et al. (August 23): Specimens received from Copiah, Hinds, Perry, and Sunflower Counties where arborvitae plants were being injured. Injury reported from Jackson and Grenada territories, as well as from the northeastern part of the State.

Ohio. E. W. Mendenhall (August 6): Quite serious on arborvitae and other evergreens in Wilmington.

Illinois. C. L. Metcalf (August 23): Unusually abundant upon arborvitae and other evergreens in central Illinois.

Missouri. L. Haseman (August 29): Attracted much attention throughout the State since the middle of August. Most of the larvae are now practically through feeding. In southwestern Missouri the infestation is unusually heavy.

Oklahoma. F. E. Whitehead (August 23): Reported as defoliating trees, particularly cedars, in widely scattered sections of the State.

WALKINGSTICK (Diapheromera femorata Say)

Missouri. A. C. Burrill (August 9): First seen at wooded bluffs of Osage River, Osage County on August 9, and then in Cole County on August 17.

Minnesota. A. G. Ruggles, et al. (August 9): Reported as stripping broad-leaf trees and shrubs in north end of Wadena County; also eating corn along the edge of the groves in some places.

ASH

AN APHID (Prociphilus fraxinifolii Riley)

Nebraska. O. S. Bare (August 13): Found infesting leaves of an ash tree in Lancaster County.

AN ASH FLOWER GALL (Eriophyes fraxiniflora Felt)

New Hampshire. E. P. Felt (August 15): Present in injurious numbers on a tree at Temple.

Utah. G. F. Knowlton (August 6): Infesting 2-year-old nursery stock at Logan.

BEECH

BEECH BLIGHT APHID (Prociphilus imbricator Fitch)

Delaware. E. P. Felt (August 15): Abundant and injurious on beech in Wil-
ton area.

BIRCH

BRONZED BIRCH BORER (Agilus anxius Gory)

Maine. H. B. Peirson (August 25): Caused widespread damage to yellow and white birch stands throughout northern and eastern Maine. In many areas as many as 10 to 30 percent of the birch is dying.

Ohio. E. W. Mendenhall (August 6): Killing birch trees at Saint Clairsville. Quite bad on large birch trees and nursery stock at Wilmington.

A CASE BEARER (Coleophora salmani Heinr.)

Maine. H. B. Peirson (July 13): Heavy defoliation of trees on Deer Island.

A SCALE (Xylococcus betulae Perg.)

Maine. H. B. Peirson (July 17): Birch aphid quite common causing white birches to turn black at Bar Harbor.

A SAWFLY (Arge scapularis Klug)

Maine. H. B. Peirson (August): Birch sawfly defoliated a small stand of white birch at Seal Harbor on August 12.

A. E. Brower (August): Large numbers reported on birch from Seal Harbor and several points in north-central Maine.

CATALPA

CATALPA SPHINX (Ceratomia catalpae Bdv.)

West Virginia. L. M. Peairs (August 22): Unusually abundant throughout the region surrounding Morgantown; larvae observed within the last few days have been very heavily parasitized. Counts on three trees showed more than 90 percent of the larvae with attached cocoons, and during the period of counting parasites were emerging from some of the larvae to form their pupae, so it is probable that the apparent parasitism is not the actual parasitism.

Ohio. E. W. Mendenhall (August 11): Larvae very bad and stripping leaves from catalpa trees in central and southern Ohio.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

New England. E. P. Felt (August 15): Caused exceptionally severe damage in many communities in New York and New England.

Vermont. H. L. Bailey (August 29): Inspections at Burlington, northwestern Vermont, and Brattleboro, southwestern Vermont, late in July and August showed no sign of a second brood.

Massachusetts. A. F. Burgess (July 22): Reported as very abundant at Great Barrington.

Ohio. T. H. Parks (August 26): Has done unusual amount of damage to English elms in the cities of central Ohio.

Kentucky. M. L. Didlake (August 26): Invading a dwelling house at Nicholasville.

LARGER ELM LEAF BEETLE (Monocesta coryli Say)

Virginia. W. J. Schoene (August 15): Seriously defoliated a row of American elms on the campus at Blacksburg. On August 10 large numbers of the mature larvae were crawling down the tree to pupate and a few beetles are emerging.

ELM BORER (Saperda tridentata Oliv.)

Ohio. E. W. Mendenhall (August 6): Found in some abundance in Moline elms at Wilmington.

ELM SAC GALL (Tetraneura ulmisacculi Patch).

Illinois. C. L. Metcalf (August 23): Specimens received from north-central Illinois with report that they are abundant on foliage of elms and are causing considerable concern in that area.

AN ELM APHID (Myzocallis ulnifolii Monell)

California. P. Simmons (August 14): Infesting elm on campus of Fresno State College. Heavy honeydew deposits on leaves and sidewalk have been noted here for a number of years. (Det. by P. W. Mason.)

A LACEBUG (Corythucha pallida ulmi C. & D.)

Vermont. H. L. Bailey (August 29): Abundant on small elms along roadside at Manchester, Bennington County, in southwestern Vermont.

EUROPEAN ELM SCALE (Gossyparia spuria Mod.)

Ohio. E. W. Mendenhall (August 6): Quite serious on red, American, and Moline elms in nursery stock at Wilmington.

Utah. G. F. Knowlton (July 12): Specimens submitted with statement that they have curled elm leaves at Manti. (Det. by H. Morrison.)

Washington. E. J. Newcomer (August 18): Quite common on elm at Yakima.

ELM SCURFY SCALE (Chionaspis americana Johns.)

Nebraska. O. S. Bare (August 13): Infested twigs submitted from Harlan County on July 21.

FIR SAWFLY (Neodiprion abietis Harr.)

Maine. H. B. Peirson (August 8): Heavily infested balsam stands at Five Islands, Boothbay, and Penaquid.

HEMLOCK

HEMLOCK LOOPER (Ellopiia fiscellaria Guen.)

Maine. A. E. Brower (July and August): Specimens of larvae received in collections from over the State.

A GEOMETRID (Nepytia canosaria Walk.)

Maine. A. E. Brower (August): Larvae of the false hemlock looper are widespread and common on both fir and spruce at Augusta.

A SCALE (Fiorinia japonica Kuw.)

New York. E. P. Felt (August 15): Reported as very abundant on hemlock at Rye.

LINDEN

LINDEN BORER (Saperda vestita Say)

New Hampshire. E. P. Felt (August 15): Reported as injuring young lindens at Hudson.

LOCUST

LOCUST LEAF MINER (Chalepus dorsalis Thunb.)

Connecticut. E. P. Felt (August 15): Caused some injury at Westport.

New York. E. P. Felt (August 15): Extremely abundant and injurious at Valatie.

R. W. Dean and O. W. Hammer (August 4): Severe defoliation of black locust trees occurred in Pleasant Valley, Dutchess County. First-brood beetles very abundant, some feeding on oak and birch.

Pennsylvania. N. C. Farr (August 23): Almost total defoliation of black locust in some localities in Lawrence County.

Ohio. E. W. Mendenhall (July 31): Very bad on locust trees in the southeastern counties.

Kentucky. M. L. Didlake (August 26): Caused widespread damage to black locust, whole groves showing brown leaves.

Tennessee. G. M. Bentley (August 5): Beetle is very prevalent on honey and black locusts in most of the counties in eastern Tennessee. Leaves on many trees completely ruined.

Delaware. L. A. Stearns (July 31): Reported damaging locust at Townsend.

COWPEA APHID (Aphis medicaginis Koch)

Utah. G. F. Knowlton (August 7): Extremely abundant and damaging black locust foliage at Garland and Hooper. Attended by ants.

MAPLE

GREEN-STRIPED MAPLE WORM (Anisota rubicunda F.)

Pennsylvania. H. R. Dodge (August 6): Reported attacking sugar maple at Carlisle. Damage not severe.

Missouri. T. E. Birkett (August 29): Second-generation larvae completely defoliated large maple trees in west-central Missouri, the first week in August. Same trees had been defoliated by the first generation of larvae.

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Montana. H. B. Mills (July): Causing considerable injury to large soft maple tree at Thompson Falls and spreading to small maples and box-elder.

MOUNTAIN ASH

A SAWFLY (Pristiphora geniculata Htg.)

Maine. H. B. Peirson (August 18): Quite generally abundant on mountain ash throughout the State.

OAK

PUBESCENT OAK KERMES (Kermes pubescens Bogue)

Pennsylvania. E. P. Felt (August 15): Somewhat abundant on scarlet oak in the Philadelphia area.

North Carolina. H. Morrison (August 4): Reported as killing large numbers of small twigs in crowns of post oak trees in Asheville and Oteen. (Det. by H. Morrison.)

RED-HUMPED OAK CATERPILLAR (Synmerista albifrons A. & S.)

Connecticut. A. De Caprio (August 15): Attacking red and white oak at Bloomfield.

A LECANIUM SCALE (Lecanium sp.)

Tennessee. G. M. Bentley (August 22): Present on terminal limbs of oak trees and causing tips to die. Very prevalent in Hamilton County.

PAULOWNIA

IMPERIAL MOTH (Eacles imperialis Drury)

West Virginia. L. M. Peairs (August 22): Larvae fully grown on isolated Paulownia tomentosa at Morgantown.

PINE

NANTUCKET PINE SHOOT MOTH (Rhyacionia frustrana Comst.)

Virginia. L. D. Anderson (August 20): Very abundant in several plantings of small loblolly pines at Norfolk.

Nebraska. O. S. Bare (August 13): Cedar twigs damaged by R. frustrana bushnellii Busck submitted from Thomas County on July 17.

RED-HEADED PINE SAWFLY (Neodiprion lecontei Fitch)

Virginia. L. A. Hetrick (August 23): Adults emerging on pine at West Point to lay eggs for second generation.

INTRODUCED PINE SAWFLY (Diprion simile Htg.)

Minnesota. M. W. Wing (August 20): Fairly common on scotch and white pine at Saint Paul, Hamel, Long Lake, and Minneapolis.

A WEEVIL (Pissodes approximatus Hopk.)

Maine. H. B. Peirson (August 24): Injured ornamental red pine at Bangor. Larvae tunneling in main stem. Adults emerging.

GALL APHIDS (Pemphigus spp.)

Utah. W. E. Peay and H. C. Bennion (July 25): P. populicaulis Fitch is infesting numerous leaves of poplar trees at Richfield.

G. F. Knowlton (July 28): P. populicaulis is infesting a large number of leaves on balsam poplar at Roy and Populus deltoides at Trenton and Logan. P. betae Doane has caused galls on poplar leaves at Sunset and Clinton. P. populiglobuli Fitch has caused galls on numerous junctions of leaf blade and petioles of balsam poplar at Roy and Trenton. (August 16): P. populitransversus Riley is infesting poplar leaf petioles at Logan and Hooper.

POPLAR VAGABOND APHID (Mordwilkoja vagabunda Walsh)

Nebraska. O. S. Bare (August 13): Caused growths on leaves of cottonwood in Sheridan County. Specimens submitted on July 21.

W. E. Peay and H. C. Bennion (July 25): Seriously infesting a few poplar trees at Richfield.

COTTONWOOD LEAF MINER (Zeuzophora scutellaris Suffr.)

Texas. R. K. Fletcher (July 25): Present in Deaf Smith County on cottonwood.

A CERAMBYCID (Parandra brunnea F.)

Nebraska. O. S. Dare (August 13): Specimens collected from a boxelder tree and cottonwood stumps in Dawson County on August 9.

REDBUD

REDBUD LEAF ROLLER (Gelechia cercerisella Chamb.)

Kansas. H. R. Bryson (July 28): Caused considerable injury to redbud tree. Heavy infestations on ornamental redbuds, combined with unfavorable weather conditions, have resulted in death of many trees, while others have dropped their leaves prematurely.

A MOTH (Norape crotata Grote)

Maryland. W. M. Davidson (August 19): Has been increasing yearly on ornamental redbud trees at Beltsville.

Virginia. M. G. Perrow (August 20): Caterpillar sent from Lynchburg.
(Det. by C. Heinrich.)

SPRUCE

EUROPEAN SPRUCE SAWFLY (Gilpinia polytoma Htg.)

Maine. H. B. Peirson (August 26): General outbreak is less than last year but there are still heavy defoliations in some areas. About 10 percent of the larvae in sections of northern Maine have been attacked by a wilt disease.

COOLEY'S SPRUCE GALL (Adelges cooleyi Gill.)

Utah. G. F. Knowlton (August 1): Injured some white and Colorado blue spruce trees on the college campus at Logan.

AN APHID (Neomyzaphis abietina Walk.)

Oregon. F. P. Keen (July 31): Severely defoliated and killed some Sitka spruce trees along the Oregon coast. Similar damage is reported from Washington and Alaska.

SPRUCE MITE (Paratetranychus ununguis Jacobi)

Delaware. L. A. Stearns (July 22): Found heavily infesting California spruce at Middletown.

TREE-OF-HEAVEN

AILANTHUS WORM (Atteva aurea Fitch)

Virginia. L. A. Hetrick (August 8): Feeding observed on Ailanthus and boxelder in Northumberland and King William Counties. (Det. by C. Heinrich.)

Missouri. A. C. Burrill (July 26): Reported as present in epidemic numbers on 100 trees and shoots at one location in Jefferson City.

WALNUT

WALNUT CATERPILLAR (Datana integerrima G. & R.)

Vermont. H. L. Bailey (August 29): Abundant on hickory tree at Grand Isle, Grand Isle County, and Lake Champlain. Many clusters of molt skins and a few larvae were found feeding on August 22.

Ohio. E. W. Mendenhall (August 11): Quite serious on walnut trees and have defoliated some of them in central and southern Ohio.

WILLOW

AN APHID (Chaitophorus viminalis Monell)

Utah. G. F. Knowlton (August 6): Attacking willow near Park City.

A TINGID (Corythucha mollicula O. & D.)

Florida. A. N. Tissot (August 27): Specimens of badly injured willow leaves were submitted from Saint Petersburg on August 22. Only cast nymphal skins were on the leaves, but the insect was apparently the above species.

A PSYLLID (Trioza naura Foerst.)

Utah. G. F. Knowlton (August 21): Specimens damaging willows at Caineville on August 14. (Det. by P. W. Oman.) Specimens of Asaphes americana Gir. (det. by A. D. Gahan) were reared from the above material.

I N S E C T S A F F E C T I N G G R E E N H O U S E

A N D O R N A M E N T A L P L A N T S

CHINCH BUGS (Blissus spp.)

Maine. H. B. Peirson (August 15): Great numbers of B. hirtus Montd. found destroying lawns in Augusta, Belgrade, and Skowhegan, the lawns being entirely brown in some instances.

Vermont. H. L. Bailey (August 29): Small outbreak of B. hirtus in Chelsea, Orange County, central Vermont, principally on grass.

Massachusetts. A. I. Bourne (August 28): Great increases in local infestation of B. hirtus. Reported as most prevalent in Worcester County or eastward but it has been reported from other sections of the State where local outbreaks have occurred on lawns.

Rhode Island. B. Eddy (August 28): B. hirtus is heavy in lawns throughout Providence.

Florida. A. N. Tissot (August 27): B. insularis Barber has been reported as damaging lawns at Dunedin on July 18, at Lake Wales on July 19, at Jacksonville on August 4, at Tallahassee on August 15, and at Gainesville during August.

A BEETLE (Lema sexpunctata Oliv.)

Virginia. Larvae and adults have been very abundant on the Asiatic day flower in the woods on the Experiment Station grounds and have actually killed many plants.

PACIFIC FLATHEADED BORER (Chrysobothris mali Horn)

Arizona. C. D. Lebert (August 17): Severe infestations observed on roses and pyracanthas in the Phoenix Area. Several plants were killed and many severely injured.

A MITIDULID (Meligethes aeneus F.)

Montana. H. B. Mills (July 31): Taken in abundance on snapdragons, sweet pea, and other cut flowers grown in the open at Bozeman. No visible damage but considerably annoying.

JERUSALEM CRICKET (Sternopelmatus fuscus Hald.)

Utah. G. F. Knowlton (July 18): Attacking dahlia roots in a garden in the Spring Canyon area of Carbon County.

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum Westw.)

Minnesota. M. W. Wing (August 20): Present on tomatoes, gladioli, etc., at Sleepy Eye in Brown County.

WHITEFLIES (Aleyrodidae)

Georgia. O. I. Snapp (August 13): Very abundant and causing considerable damage to shrubbery and privet around homes in Fort Valley, central Georgia.

T. Thompson (August 17): Very severe infestation of adults observed in and around various ornamentals at Thomasville.

A LEAFHOPPER (Empoasca sp.)

Texas. W. C. Maxwell (August 14): Caused severe damage to a dooryard planting of morning-glories in Robstown. Some leaves have as many as 40 nymphs and adults per leaf.

AN APHID (Macrosiphum ambrosiae Thomas)

Utah. G. F. Knowlton (August 24): Attacking asters in flower garden at Howell.

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

Texas. R. K. Fletcher (August 1): Found on pittosporum, althea, and salt cedar in Jefferson County.

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

Minnesota. M. W. Wing (August 20): Scarce on crab apple at Duluth.

Utah. G. F. Knowlton (July 28): Heavily infesting willow at Roy.

CAMELLIA

TEA SCALE (Fiorinia theae Green)

South Carolina. J. A. Berly (August 22): Quite common and causing damage to camellia plants at Clemson, in the coastal area.

CRAPENYRTLE APHID (Myzocallis kuhawaluokalani Kirk.)

South Carolina. J. A. Berly (August 22): Rather heavy infestations observed on crapemyrtle at Clemson, in Charleston County, in early August. More abundant than usual.

A WEEVIL (Rhodobaenus tredecimpunctata Ill.)

Georgia. T. L. Bissell (August 25): Many borers on dahlia plants at Griffin on August 8. Several plants have been killed. On August 9, at Atlanta, one large plant wilted after rot at base following billbug work in a few branches. Borers caused accumulation of water in the stem of a large plant with subsequent rot.

Mississippi. C. Lyle, et al. (August 23): Specimens of larva, pupa, and adult were found in the stems of dahlia plants in Jones County on August 19.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

New England. E. P. Felt (August 15): Locally abundant in southwestern New England.

Pennsylvania. E. P. Felt (August 15): Locally abundant on euonymus in the Philadelphia area and also in southwestern New England.

Maryland. E. N. Cory (August 23): Present in Baltimore.

Georgia. T. L. Bissell (August 25): Killing euonymus plants at Oxford on August 16.

Mississippi. C. Lyle (August 23): Heavily infested euonymus twigs were received from Alcorn County on August 13.

GLADIOLUS

GLADIOLUS THRIPS (Taeniothrips simplex Morison)

Minnesota. M. W. Wing (August 20): Present on gladioli in Ramsey County and at Litchfield in Meeker County.

Iowa. C. J. Drake (August 5): Specimens taken from gladiolus at Sioux City were sent in on July 2. (Det. by C. F. W. Kuesbeck.)

Utah. G. F. Knowlton (August 1): Injuring gladiolus in a garden at Farmington.

HAWTHORN

COTTON LACEBUG (Corythucha gossypii F.)

Maryland. C. Graham (August 15): Present on hawthorn at Upper Marlboro.

IRIS

IRIS BORER (Macronoctua onusta Grote)

Illinois. C. C. Compton (August 23): Caused severe injury to home and commercial plantings in central and northern Illinois. Japanese varieties, which are usually less subject to attack, have suffered severe damage in field plantings in Cook County.

JUNIPER

JUNIPER WEBWORM (Dichomeris marginellus F.).

Ohio. E. W. Mendenhall (August 13): Quite bad on young junipers in nursery at Ironton, Lawrence County.

MAGNOLIA

MAGNOLIA SCALE (Neolecanium cornuparvum Thro)

New York. E. P. Felt (August 15): Somewhat injurious on magnolia near Monroe.

ROSE

ROSE MIDGE (Dasynura rhodophaga Coq.)

Massachusetts. A. I. Bourne (August 28): Rather serious outbreak reported on August 22. Found to be very abundant and blasting the buds and new growth in a large commercial planting of roses being grown under cloth.

ROSE CURCULIO (Rhynchites bicolor F.)

Utah. G. F. Knowlton (July 26): Damaging roses at Randolph and Provo.

LEAFHOPPERS (Cicadellidae)

Utah. G. F. Knowlton (August 4): Seriously damaging rose foliage at Grantsville.

WATERLILY

WATERLILY APHID (Rhopalosiphum nymphaeae L.)

Utah. G. F. Knowlton (August 1): Moved on to water hyacinth when heavily infested waterlily leaves were cut off at Logan.

YEW

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus L.)

Rhode Island. B. Eddy (July 28): Feeding heavily on bark of yew and dwarf juniper at Lincoln.

ZINNIA

FLOWER WEEWORM (Homoeosoma electellum Halst.)

Minnesota. M. W. Wing (August 20): Fairly common on zinnias at Springfield, Motley, Waverly, and Moorhead.

A LACEBUG (Corythucha arcuata Say)

Texas. W. C. Maxwell (August 26): At Robstown, this species, or a closely related one, is doing noticeable damage to zinnias in a dooryard planting, most of the leaves on several plants being affected. Both adults and nymphs are present in considerable numbers. Earlier infestation of lighter intensity was noticed on these same plants.

INSECTS ATTACKING MAN AND
DOMESTIC ANIMALS

MAN

MOSQUITOES (Culicinae)

Georgia. O. I. Snapp (August 1): Infestation at Fort Valley, in central Georgia, is the heaviest observed at that location by the reporter during a 21-year residence, and is causing much annoyance to inhabitants.

Florida. G. H. Bradley (July 31): Adult Aedes taeniorhynchus Wied. and A. sollicitans Walk. became abundant at New Smyrna on July 19 and cause considerable annoyance during the remainder of the month. Average daily catch for the month was 77 at the laboratory, as compared with catches of 238 in July 1939, and 53 in July 1940.

J. B. Hull (August 5): Mosquitoes, mostly A. taeniorhynchus, were numerous on the island near Fort Pierce during all of July. Some A. sollicitans were also observed. Although adults were numerous no breeding was found in the diked marsh. In the back country, adjacent to grove and range land, Psorophora spp. were much less abundant in July than in previous years.

J. E. Webb, Jr. (August 18): Specimens of Culex salinarius Coq., C. pilosus D. and K., Anopheles quadrimaculatus Say, A. crucians Wied., Aedes taeniorhynchus, A. infirmus D. and K., A. canadensis Theob., Psorophora columbiana D. and K., and Theobaldia nolanura Coq. were taken in the Camp Flaming area. (Det. by A. Stone.)

Illinois. H. E. Ross (August 23): Rather severe outbreaks associated with salt-water sloughs near oil wells. Dupon suffered most in April and May and Centralia from mid-July to present time.

North Dakota. J. A. Munro (August 22): Mosquitoes reached their high peak of incidence in late June and remained abundant for several weeks. Following rather heavy rainfall in early August they are again becoming abundant in many sections of the State, with A. vexans Meig. and A. dorsalis Meig. being the predominating species. In a pond near Fargo contaminated by seepage from an adjoining stockyard examined recently, the mosquito larvae were present at the rate of approximately 3,000 per square foot of water surface.

Utah. G. F. Knowlton (August): A. dorsalis and Aedes sp. are abundant and attacking man, cattle, and horses at Flux, Dolomite, Timpie, down Skull Valley, and Burneister, in Tooele County. On August 13, A. dorsalis were very abundant and annoying at Blue Creek railroad station, Doneyville, Corinne, east Promontory, Petersboro, Clearfield, and Hooper. Some A. nigromaculis Ludl. were also present in alfalfa fields at Taylor and on August 16, A. dorsalis were abundant and annoying at Timpie,

Dolonite, west Corinne, Deweyville, Denson, and west Logan. On July 25 mosquitoes were annoying to man on Skull Valley ranches and in City Creek Canyon, and on August 6, A. dorsalis and A. nigromaculis were very abundant and attacking man, horses, and cattle west of Logan and at Denson. Horses have been dying of equine encephalomyelitis in this area recently, and it is believed that the deaths may be caused by mosquito abundance.

Washington. C. M. Gjullin (July 31): A few specimens of Mansonia perturbans Walk. were taken in traps in two locations in Yakima Valley. This is a new record for the State.

Oregon. E. F. Knipling (July 31): Large population of M. perturbans was found near Scappoose during July. First record in Oregon. Of a total of 128 mosquitoes collected by hand, 84 were M. perturbans, 33 were Anopheles maculipennis Meig., and 8 were A. punctipennis Say, and there was 1 each of Aedes vexans, Theobaldia inornata Will., and Culex tarsalis Coq.

FLEAS (Siphonaptera)

Maine. F. C. Bishopp (August 27): Cat flea (Ctenocephalides felis Bouche) was reported as badly infesting a house in Grand Lake Stream, Washington County. (Det. by H. L. Trembley.)

A. E. Brower (July and August): Several reports on fleas in the Augusta area from houses with pet dogs and cats.

Massachusetts. A. I. Bourne (August 23): Fleas reported as invading dwelling houses. Outbreaks often associated with the presence of domestic animals, but in many cases they were entirely independent of them.

Georgia. O. I. Snapp (August 11): Reported as more numerous than usual at Fort Valley.

Tennessee. G. M. Bentley (August 23): Fleas reported from different parts of the State as infesting basements and cellars, in which dogs sleep.

Ohio. T. H. Parks (August 26): Fleas reported as unusually numerous in houses and barns.

Nebraska. C. S. Bare (August 13): Fleas reported as present in houses, chicken houses, hog houses, granaries, and other buildings, in Douglas, Lancaster, and Hamilton Counties during the period from July 16 to August 13.

BEDBUG (Cimex lectularius L.)

Georgia. O. I. Snapp (August 11): Bedbugs reported as more numerous than usual at Fort Valley.

Mississippi. C. Lyle (August 23): Reported from Coahoma and Jones Counties.

Nebraska. O. S. Bare (August 13): Specimens received from Cass County. Reported from Dawson and Howard Counties on July 28 and August 11, respectively.

Utah. G. F. Knowlton (August 21): Infesting a home at Lasal.

A GNAT (Chaoborus astictopus D. and K.)

California. A. W. Lindquist (July 31): Considerably more gnats observed at Lakeport than on the east side of Clear Lake, where there have been very few present.

CHIRONOMIDS (Tendipes sp.)

California. A. W. Lindquist (July 13): Unusual number observed dancing along the water's edge on the north end of Lake Pillsbury near the large area of shallow water.

A BOTFLY (Cuterebra sp.)

Virginia. F. C. Bishopp (July 19): Full-grown first-instar larva was recovered from the nose of a human. Supposed that the infestation occurred when an insect stung the victim in the nostril on July 8 in a garden in Arlington. Painful symptoms accompanied the infestation. Rabbits, squirrels, and chipmunks frequented the yard. (Det. by E. F. Knipling.)

KISSING BUGS (Triatoma spp.)

Mississippi. F. C. Bishopp (July 26): Residents at Sarepta claim to have been stung or bitten by T. sanguisuga Lec. at night, and it is frequently found in beds. (Det. by P. W. Oman.)

California. F. C. Bishopp (July 26): T. protracta Uhl. caused considerable pain and discomfort after biting individuals at Red Bluff. (Det. by P. W. Oman.)

TROPICAL RAT MITE (Liponyssus bacoti Hirst)

South Carolina. F. C. Bishopp (August 11): Severe house infestation was reported from Southern Pines. Occupants were annoyed and bitten.

AMERICAN DOG TICK (Dermacentor variabilis Say)

Massachusetts. C. N. Smith (July 31): Adults declined sharply during July on Marthas Vineyard.

District of Columbia. F. C. Bishopp and H. L. Trembley (August): Adults are decreasing in numbers. Dogs examined during the season have had few or no ticks attached during the latter part of August. One specimen found on man reported from Seneca on August 23 and another from southern Maryland on August 23 or 24.

Juliet H. Carrington (August 5): One unengorged male collected on a dog, in northwestern Washington, east of 16th Street. (Det. by F. C. Bischoff.)

BROWN DOG TICK (Rhipicephalus sanguineus Latr.)

Kentucky. M. L. Didlake (August 26): Present on dogs and lawns in Louisville and Woodford County.

Missouri. P. C. Stone (August 15): Infestation in a house in Saint Louis was so great that one could see ticks crawling from all directions when the dog walked across the floor of the kitchen. Ticks were also observed to crawl toward the door in the afternoon where the sunlight was shining into the room.

CATTLE

SCREWORMS (Cochliomyia spp.)

Georgia. T. Thompson (August 4-8): Severe screwworm damage universally reported by farmers visited in south Charlton County. Present on cattle and hogs.

Florida. R. L. Brinkman (August 12): C. americana C. & P. infestation in livestock at Tallahassee is getting more frequent as the summer progresses.

J. B. Hall (August 5): Reported as scarce by cattle owners near Fort Pierce.

New Mexico. J. W. Benner (August 7): C. americana reported as unusually troublesome at Roswell and Lovington.

Mississippi. C. Lyle, et al. (August 23): C. americana reported in outbreak numbers among cows and hogs in Lafayette, Panola, and Tate Counties.

Missouri. L. Hasenan (August 20): Maggots of full-grown C. americana were taken from cheek and maxillary sinus of a patient by one of the doctors in the State. (Det. by E. F. Knipling.)

HORN FLY (Haematobia irritans L.)

Utah. G. F. Knowlton (July 28): Annoying cows at Sunset.

STABLEFLY (Stomoxys calcitrans L.)

Utah. G. F. Knowlton (July 28): Annoying cows at Sunset. (August 24): Very annoying to horses and man around barns and corral at Howell, in Box Elder County.

CAPILLATE CATTLE LOUSE (Solenopotes capillatus End.)

North Dakota. F. C. Bishopp (August 28): Specimens submitted by J. A. Munro, of the North Dakota Agricultural College, with statement that this is the first case of sucking lice on cattle locally that he has seen in years.

DEER FLIES (Chrysops spp.)

Utah. G. F. Knowlton (August): C. fulvastra O.S. and C. discalis Will. are extremely abundant and viciously attacking man and cattle in the Dolomite-Timpie-Flux areas of Tooele County.

EYE GNATS (Hippelates spp.)

Maryland. H. D. Trembley (August 19): H. pallipes Lw. was present in numbers and annoying a dog at Glenmont. (Det. by D. G. Hall.)

South Carolina. F. C. Bishopp (July 31): H. plebejus Lw. and H. pusio Mall are quite troublesome at Beaufort to persons in this area. Present at times in the center of town and were especially bad at the Marine Base on Parris Island. (Det. by D. G. Hall.)

A HORSEFLY (Tabanus punctifer O.S.)

Utah. G. F. Knowlton (August): Annoying horses at Brigham, Perry, Honeyville, Slaterville, and east Promontory on August 13, and west of Farmington and near Timpie on August 16.

HORSE BOTS (Gasterophilus spp.)

Utah. G. F. Knowlton (August 24): Annoying horses at Howell and Grantsville

CHICKEN MITE (Dermanyssus gallinae Deg.)

Oregon. E. F. Knipling (August 11): House infestation reported from Portland. (Det. by H. E. Ewing.)

HOUSEHOLD AND STORED-PRODUCTS INSECTS

TERMITES (Isoptera)

Virginia. L. A. Metrick (August 12): Reproductive individuals of Reticulitermes hageni Banks were swarming from an infested dwelling in West Point.

Utah. G. F. Knowlton (July 29): Termites are damaging houses at Clearfield and near Ogden. (August 25): Damaging a garage at Logan.

ANTS (Formicidae)

Illinois. C. L. Metcalf (August 23): Solenopsis molesta Say caused a very troublesome and persistent infestation of a residence in Urbana.

Florida. E. A. Back (August 28): S. geninata F. is increasingly abundant at Saint Cloud and surrounding country, swarming over trees, plants, flowers, and fruits.

Mississippi. C. Lyle, et al. (August 23): Specimens of S. xyloni MacCook were received from Yazoo County on August 5, and specimens of Crematogaster ashmeadi Mayr. were received from Newton County today. Iridomyrmex humilis Mayr are abundant in the infested localities of Hinds County that were untreated last year. Specimens of Monomorium pharaonis L. were received from Harrison County on July 24.

Utah. G. F. Knowlton (July 28): Black ants are injuring a lawn at Ogden. (August 8): Ants attending European elm scales are annoying on a lawn at Logan.

GERMAN COCKROACH (Blattella germanica L.)

Virginia. E. A. Back (August 28): Specimens were received on August 6 from Charlottesville.

Mississippi. C. Lyle (August 23): Reported as present in Marshall, Bolivar, and Washington Counties.

BROWN-BANDED ROACH (Supella supelloctilium Serv.)

Virginia. E. A. Back (August 28): Found to be very abundant during August in a house in Norfolk.

Illinois. W. E. McCauley (August 23): Apparently quite common in Rantoul in and near the large Army training school. Also being found more frequently in Champaign-Urbana, 17 miles distant.

Missouri. E. A. Back (August 28): Specimens received from Kirksville, sent July 29, with statement that they are abundant in kitchen cabinets.

FIELD CRICKET (Gryllus assimilis F.)

Arizona. T. P. Cassidy (July 22): Heaviest migration into town of Tucson that the reporter has ever seen. Reported as causing severe damage to cotton in the Casa Grande-Coolidge area, cutting large plants off just above the surface of the ground and ruining stands in several fields.

California. P. Simmons (July 21): Invaded a service station at Fresno, chewing sponge rubber pads and causing a stench in a room where accessories were stored. Reported as numerous at Los Banos and near Mendota.

A CLOTHES MOTH (Tineola walsinghami Busck)

Florida. A. W. Tissot (August 27): Specimen received from Lakeland on July 22, Daytona Beach on July 30, and Perry on August 16.

LONG-HORN BEETLES (Cerambycidae)

Florida. A. W. Tissot (August 27): On July 1, at Gainesville, an adult Eburia quadrigeminata Say emerged from a built-in desk, built about 2 years ago. On July 21, at Hollywood, adults were emerging from baseboards in a house built in 1939, and on July 21, at Fort Myers, they were emerging from door and window casings in a house built 3 years ago. On July 23, at Fellsmore, an adult emerged from a new maple chair, and on August 6, at Lake Worth, adults were emerging from red cypress window sills and door jambs in a house built about 2 years ago.

E. A. Back (August 28): Specimens of furniture borer, E. distincta Hald., were sent from Saint Petersburg on August 13. They had emerged from rustic furniture. (Det. by W. S. Fisher.)

Mississippi. C. Lyle (August 23): Larvae of Callidium antennatum Newm. were sent in from Clay County where they had emerged from the lumber in a new house built of pine lumber. (Det. by W. H. Anderson.)

DRUG STORE WEEVIL (Stegobium paniceum L.)

Rhode Island. B. Eddy (July 31): Light infestation in Providence store.

A BEETLE (Cartodere argus Reitt.)

New York. E. A. Back (August 28): Specimens were sent in on July 24 from Richmond Hill where they were prevalent in a newly renovated house, and on July 31 from New York where they were abundant in a newly completed house. (Det. by L. L. Buchanan.)

LARDER BEETLES (Dermestidae)

Massachusetts. E. A. Back (August 28): Specimens of D. lardarius L. were received August 16 from Lowell.

New Jersey. E. A. Back (August 28): Specimens of the incinerator bug (D. cadaverinus F.) were received on August 6 from a house in Raritan.

Virginia. E. A. Back (August 28): Many adults and larvae of D. cadaverinus were collected on August 21 in an apartment house in Norfolk.

BEAN WEEVIL (Acanthoscelides obtectus Say)

Missouri. L. Haseman (August 29): Reported as numerous during the latter half of August. In central Missouri, weevils have already begun to emerge from dry beans that are still in the gardens.

FIREBRAT (Thermobia domestica Pack.)

Illinois. C. L. Metcalf (August 23): Numerous infestations reported from many parts of the State.

PSOCIDS (Psocidae)

New York. E. A. Back (August 28): Reported on August 5 as very troublesome in a newly constructed 200-apartment house building in Brooklyn.

Ohio. E. A. Back (August 28): Specimens received July 23 from lumber company at Cleveland with statement that they were very abundant in a new house.

Michigan. (August 28): Specimens received on July 23 from Flint. Reported as very abundant in a house completed in February 1941.

CEREAL THRIPS (Limothrips cerealium Hal.)

Pennsylvania. E. A. Back (August 28): Reported as abundant on walls of house, inside and outside of windows, and even crawling on human beings at Irwin. Specimens received on August 1. (Det. by J. C. Crawford.)

A CIMICID (Cimexopsis nyctalis List.)

Virginia. L. A. Hetrick (August 8): Adults and nymphs were abundant around a mantel in a dwelling at West Point, and had apparently come from an abandoned chimney swift nest in the chimney. (Det. by P. W. Oman.)

Ohio. E. A. Back (August 28): Reported as crawling in great numbers near a fireplace in a house at Hillshoro. Specimens submitted. (Det. by P. W. Oman.)

A PLANT BUG (Lygaeus lateralis Dall.)

Arizona. C. D. Lebert (August 22): Reported as migrating by the millions on the desert in the Phoenix area, and getting into houses and annoying residents.

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus L.)

Massachusetts. A. I. Bourne (August 28): Reported as present in usual numbers by the last week of July, and invading homes.

Ohio. T. E. Parks (August 26): Specimens received from Lake County, with statement that they were found in a house. (Det. by J. H. Knull.)

Michigan. E. A. Back (August 28): Specimens of B. rugosostriatus Goeze received from a truck farm in Ironwood where house was invaded by droves as dusk fell. (Det. by L. L. Buchanan.)

THE MORE IMPORTANT RECORDS FOR SEPTEMBER

The second generation of Melanoplus mexicanus Sauss., continued to develop in the southern Great Plains area in eastern Colorado, western Kansas, southern Nebraska, and the Panhandle of Texas and Oklahoma. Hatching, which began in August in most of the area, was completed early in September. In the southern portion of the infestation development to the adult stage was completed by the middle of September, though progressively later to the north. Dispersal flights were reported in Kansas and Texas, while general movement of nymphs and adults took place from stubble into margins and fields of fall wheat. Varying degrees of damage to fall-sown and volunteer grain was caused, in most cases, only to margins, though in some fields injury was general.

White grubs caused severe injury to corn in parts of Maine. Similar damage was reported from the remainder of New England and Pennsylvania and westward to Illinois, Wisconsin, and Kansas.

Fall armyworm was generally reported as numerous and destructive from the South Atlantic States westward to Kansas and Iowa. Damage by this insect was also reported from California.

Corn ear worm was unusually abundant in Maryland and Virginia and throughout the Mississippi Valley. Late sweet corn in Oregon was heavily infested. Heavy damage to tomatoes is reported from Utah.

The European corn borer was reported from several counties in Wisconsin not previously known to be infested.

The velvetbean caterpillar severely damaged soybeans and velvetbeans in the South Atlantic States from North Carolina to Florida and around the Gulf to Louisiana, in many cases completely defoliating the plants.

Relatively heavy second-brood infestations of codling moth were reported from the East Central States. Infestation by this insect in Maine was the heaviest in the last 5 years.

The peach twig borer very severely damaged almonds in the Sacramento Valley of California.

Hibernating populations of the plum curculio in the Fort Valley section of Georgia were heavier than usual.

The grape leafhopper produced heavy defoliation of scuppernong grape from Virginia to Georgia.

Heavy infestation of citrus by the Florida red scale was reported from parts of Florida.

Garden flea hopper was more abundant than usual in the South Atlantic States from Maryland to Alabama and westward to Missouri.

A new species of tomato mite, Phyllocoptes destructor Keif., first recorded in California in 1940, has spread rapidly and is now recorded throughout the Sacramento and San Joaquin Valleys and westward to Santa Clara and Napa Counties.

The boll weevil situation has not materially changed over that reported last month. Populations are still very high throughout the greater part of the Cotton Belt. In the Gulf States and in the lower Mississippi Valley boll weevil has been greatly reduced on account of defoliation by cotton leaf worm.

Serious damage by bollworm to late bolls is reported from the South Atlantic States to Florida and round the Gulf region northward to Tennessee.

The fall webworm was rather numerous along the Atlantic seaboard from Connecticut to Florida, and in scattered localities from Minnesota to Mississippi.

Rather heavy infestation by the palmerworm on oak and hazel nut over the northeastern half of Minnesota was reported.

The screwworm is being reported in some abundance at Ocala, Fla. There was reported from Indiana and Montana for the first time. It was taken from bears in a zoo at San Diego, Calif.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

Arizona. B. M. Gaddis and assistants (August 31-September 6): Second-generation Melanoplus mexicanus Sauss. and marginal populations of M. differentialis Thos. still presenting problems of control in several sections of the State. The former species causing considerable damage to alfalfa in the Stuart district of Cochise County, the latter to truck crops in the Salt River Valley of Maricopa County.

Texas.^{1/} (September 7-13): The second-generation M. mexicanus in the northern and central parts of the Texas Panhandle is about 15 percent adult; however, in the more southern counties it was more advanced, about 35 percent of the hoppers having reached the adult stage. Flights in a southerly direction were reported on September 9 over Childress, Hale, and Swisher Counties. Crop damage was confined chiefly to young wheat. Marginal destruction averaged 15 yards into fields in the more heavily infested counties in the northern part of the Panhandle.

Colorado.^{1/} (August 31-September 6): In the dry-land areas of eastern Colorado the heaviest populations of second-generation M. mexicanus were found in the eastern part of Baca County, where they averaged 30 per square yard in weedy environments and 50 in margins. Twenty percent were adult. Small-grain populations in Sedgwick, Phillips, Yuma, Kit Carson, Cheyenne, Kiowa, Lincoln, and Washington Counties averaged 15 per square yard in fields and 30 in margins. In the irrigated areas of Prowers, Bent, Otero, Crowley, and eastern Pueblo Counties populations averaged 50 per square yard in alfalfa and 75 in margins, while in small-grain stubble they averaged 20 in fields and 30 in margins. (September 14-20): Development of second-generation M. mexicanus continued rapidly during the week in eastern Colorado, approximately 70 percent reaching the adult stage and 20 percent the fifth-instar nymphal stage. Grasshopper activity was not great enough to result in appreciable population shifts. Local movement into fall wheat from adjacent stubble and weeds was general, however, resulting in light marginal damage to wheat in fields unprotected by baiting. In the irrigated areas the hoppers had completely defoliated some alfalfa fields.

Oklahoma.^{1/} (September 7-13): Approximately 15 percent of the second generation of M. mexicanus in the Panhandle area had reached the adult stage. Seventy percent were fourth- and fifth-instar nymphs. Marginal wheat was damaged in Texas and Cimarron Counties, especially where wheat adjoined weedy stubble fields. (September 14-20): Second-generation M. mexicanus was approximately 50 percent adult and 35 percent fourth- and fifth-instar nymphs.

Kansas.^{1/} (September 14-20): South of the Arkansas River approximately 90 percent of the second generation of M. mexicanus was adult, while north of the river about 75 percent had reached the adult stage. From very

^{1/} Where no name is given after the State the report is by B. M. Gaddis and assistants.

light to moderate flights occurred during the fore part of the week throughout western Kansas, from southeast to southwest. Movement of hoppers from stubble into margins of fall-wheat fields was heavy; however, most hoppers concentrated along margins, and field populations averaged less than 10 per square yard. Damage to fall seedings and winter wheat was increasing daily and was estimated at 10 percent of all wheat seeded in the more heavily infested counties—Grant, Greeley, Hamilton, Morton, and Stanton.

Kansas. E. G. Kelly (September 25): It appears that many species of grass-hoppers are laying eggs. Second-generation M. mexicanus has been devastating wheat around the edges of fields in the western part of the State, extending into Kansas about three counties deep. M. bivittatus Say and M. differentialis are doing considerable damage to alfalfa and early planted wheat through the eastern half of the State.

Nebraska.^{1/} (September 14-20): Approximately 60 percent of the second-generation M. mexicanus was adult and 30 percent in the fifth-instar nymphal stage at the end of the week. Bait was used from Deuel County east to Cass and Sarpy Counties, in the southern part of the State, and also in York, Seward, Polk, Clay, Fillmore, and Hamilton Counties.

Missouri. H. E. Brown (September 26): Practically all individuals of second-generation M. mexicanus are adult. Egg laying by this species has been under way for some days, and at least 50 percent of the eggs of M. differentialis have been laid.

Iowa.^{1/} (September 14-20): Second-generation M. mexicanus was reported as rather abundant in the southwestern part of the State.

Utah. G. F. Knowlton, et al. (September 18): Many M. mexicanus and M. femur-rubrum Deg. are still alive and laying eggs at Orem and North Ogden. In general, M. bivittatus has laid its eggs and decreased noticeably in abundance. M. mexicanus, M. packardii Scudd., and M. bivittatus are still abundant at North Ogden and Huntsville, and moderately abundant at Uintah, Eden, and southeast of Ogden, in Weber County. (September 24): Schistocerca shoshone Thos. is moderately abundant in a raspberry patch at Orem.

FIELD CRICKET (Gryllus assimilis F.)

Texas. C. B. Nickels and W. C. Pierce (August 10-23): Crickets were a nuisance in business sections of Brownwood, Brady, Coleman, Abilene, and San Angelo. It was necessary to cut off bright lights to avoid attracting enormous numbers of crickets. Dead bodies were so abundant on the streets of Brownwood that it was necessary to wash the streets with a fire hose. (Det. by A. E. Gurney.)

W. C. Maxwell (September 22): Very numerous in the vicinity of Robstown. Quantities have collected nightly in front of buildings, where they were apparently attracted by lights. A smaller species is also present but the larger species is predominant.

MAY BEETLES (Phyllophaga spp.)

Maine. Maine Agr. Expt. Sta. (August): White grubs have caused severe injury to corn at Norway, and probably in other areas in Oxford County.

Connecticut. J. Peter Johnson (September 25): Damage by white grubs has been observed recently at East Hartland, East Hampton, Groton, Middletown, New London, Putnam, and Storrs. Many grubs are still feeding in the upper $1\frac{1}{2}$ inches of soil, although the soil is exceedingly dry.

Rhode Island. B. Eddy (September 5): The 3-year cycle of white grubs was extremely damaging to a lawn at Exeter School.

Pennsylvania. E. J. Udine (August 28): A local infestation of white grubs, determined as P. hirticula Knoch and P. fusca Froel., caused considerable damage to sweet corn, potatoes, and timothy in an area in the Bald Eagle Valley, some 7 miles north of Tyrone. The valley at the area of greatest damage was not more than $\frac{1}{4}$ mile wide between the woods of mountain ranges on either side. A maximum of four grubs per hill was present on one 10-acre field of sweet corn on a steep and rocky hillside. An adjacent field of timothy was also badly damaged. Other cornfields nearer the center of the valley were not seriously injured. (Det. W. H. Anderson.)

Illinois. W. P. Flint (September 24): White grubs are causing considerable damage to lawns and golf courses in the northern third of Illinois. Injury is being caused by Brood C and is much more extensive than it has been at any time during the last 10 years.

Michigan. R. Hutson (September 29): White grubs have been fairly numerous at Detroit, Carson City, Holt, Lakeview, Birmingham, and Clarksville, during the month.

Wisconsin. E. L. Chambers (September 24): White grubs are very abundant in spots over the entire State.

Kansas. H. R. Bryson (September 22): White grubs were reported as injuring bluegrass at Pittsburg and as abundant in wheat in Marshall County.

Utah. G. F. Knowlton (September 24): White grubs have damaged lawns at Salt Lake City.

JAPANESE BEETLE (Popillia japonica Newm.)

Connecticut. J. P. Johnson (September 25): Grub damage to turf became apparent the second week in September. Soil is exceedingly dry and the grubs are feeding somewhat deeper than usual.

Rhode Island. B. Eddy (September 22): Catch for 1941 showed a 40-percent increase over 1940.

Pennsylvania. B. F. Coon (September 16): Only an occasional adult can be found at Lancaster. Injury has been heavy generally, various unoffi-

cial estimates placing a 50-percent loss to field corn. Many ears completely devoid of kernels.

Virginia. N. R. Hunt (September 17): Two live adults, noted on September 14, one eating a rose in Lyon Park and another flying in Arlington County, near where old radio towers stood.

ROSE CHAFER (Macrodactylus subspinosus F.)

Wisconsin. E. L. Chambers (September 24): Abundant in lower half of the State.

CUTWORMS (Phalaenidae)

Maine. A. E. Brower (September): Heavy flight of dark-sided cutworm (Euxoa messoria Harr.) present at Augusta. Bronzed cutworm (Nephe-
lodes emnodonia Cran.) is common at light at Augusta.

Minnesota. E. E. Milliron (September 17): Variegated cutworm (Peridroma
margaritosa Haw.) was abundant in a field of unstaked tomatoes at Brooklyn Center on September 16. Approximately 25 percent of the green and ripe fruits were damaged. The yellow-striped armyworm (Prodenia ornithogalli Guen.) is generally scarce near Saint Paul. Isolated larvae were encountered on asparagus and onion. Damage light.

FALL ARMYWORM (Laphygna frugiperda A. & S.)

Virginia. H. G. Walker and L. D. Anderson (September 24): Some fields of very late corn at Norfolk reported as rather severely damaged, but, in general, the injury to corn has been much less than usual. A number of young kale fields were seriously damaged.

Florida. J. R. Watson (September 22): Reported as present on grass.

Alabama. J. M. Robinson (September 19): Reported on September 3 as present on cotton at Prattville.

Mississippi. C. Lyle, et al. (September 25): Specimens were received from Bolivar and Lauderdale Counties, where they were feeding on corn, soy beans, and velvetbeans. Also reported from Sunflower County, without mention of food plant. At State College practically all of the late corn has been ruined by the insect eating into the ears at the tip, in the middle, and at the base.

Tennessee. G. M. Bentley (September 17): Very heavy infestation in certain fields of soybeans at Clarksville, Montgomery County, destroying the leaf and entrance to pods and completely devouring the young beans. Most appreciable damage was in the variety known as 276. Variety known as Ogden, which matures earlier, had no seed injury but appreciable leaf injury. In some fields there was a loss of 60 percent of

seed and forage. In this particular area 1,000 acres had been set aside for the growing of soybeans of the two varieties mentioned above. Growers did not report the injury until the larvae began pupating.

Louisiana. C. O. Eddy (September 25): Abundant, particularly on late-planted corn.

Indiana. J. J. Davis (August 21): Reported as abundant and attacking corn at Boonville, in the extreme southern part of the State.

Missouri. G. D. Jones (September 26): Serious damage reported in east-central and south-central counties. Attack worse on early seeded barley, and other crops are also being damaged. Infestations not general, but widespread.

Kansas. H. R. Bryson (August 28): Reported as causing considerable injury to some fields of corn at Reece.

California. J. Wilcox (September 19): Reported as causing damage to young corn. A field about 1 foot high, examined on September 10, ~~was~~ about 80-percent damaged. Ears harvested on September 18 were about 10-percent infested. Similar damage to corn southwest of Garden Grove was observed by J. C. Elmore.

WEBWORMS (Loxostege spp.)

Michigan. R. Hutson (September 29): The garden webworm was sent in with infested beans from East Jordan.

Oklahoma. F. A. Fenton (September 22): The garden webworm (L. similalis Guen.) reported in alfalfa from Minco.

Utah. G. F. Knowlton (September 18): Beet webworm (L. sticticalis L.) moths are still present throughout northern Utah, but generally in reduced numbers.

CEREAL AND FORAGE-CROP INSECTS

WHEAT AND OTHER SMALL GRAINS

HESSIAN FLY (Phytophaga destructor Say)

Illinois. (September): Hessian fly has increased during the last year. The increase has been greatest in the southern half of the State, but there has been considerable build-up in the central and north-central wheat-growing areas. Checks made in wheatfields during the last 2 weeks show a considerable emergence of the fly during the week beginning September 15, and from moderate to large numbers of eggs have been laid on volunteer wheat. Not all the fly is out yet.

Iowa. H. E. Jaques (September): From light to moderate infestation in some of the extreme southeastern counties, with moderate to heavy infesta-

tions in several of the southwestern counties.

Kansas. H. R. Bryson (September 20): Frequent fall rains and an abundant growth of volunteer wheat over most of the wheat-growing area of the State has favored a heavy infestation. Reported as abundant in all volunteer wheat in the eastern part of the State.

SOUTHERN CORN ROOTWORM (Diabrotica duodecimpunctata F.)

Kansas. H. B. Hungerford (September 23): Considerable damage has been done to rye and oats near Lawrence. Several nights recently large numbers of adults were a nuisance at the lights.

CORN

CHINCH BUG (Blissus leucopterus Say)

Illinois. W. P. Flint (September 24): Bugs have left the cornfields and are in grasses or already assembling in winter quarters.

Missouri. P. C. Stone (September): Survey on corn during the month indicated moderate numbers scattered throughout the northern and western parts of the State and a light infestation in the central part. Very light third brood was present in the late green corn in the southwestern and north-central parts of the State. A few of the second-brood bugs were in the fifth instar on September 27, but most are in the adult stage and many of them have left the corn.

Iowa. H. E. Jaques (September): Light infestations in Keokuk, Cedar, Scott and Henry Counties, in the southeastern part of the State, and light heavy infestations in several counties in the western half of the State.

Kansas. H. R. Bryson (September): Second-generation nymphs caused considerable injury to sorghums and late corn in several counties during August, and continued to do so until September 20. First-generation nymphs in many localities were so far below normal abundance that barriers between small-grain fields and rowed crops were unnecessary. When these nymphs became adults they flew into fields of sorghums and late corn. Eggs were deposited and the second-generation nymphs caused injury to the young plants. Evidence of severe injury was observed in Cloud, Republic, Clay, Marion, Chase, Butler, Dickinson, and Riley Counties. Reports of similar injury were received from Franklin, Sumner, Cowley, Greenwood, Elk, and Sedgwick Counties.

CORN EAR WORM (Heliothis armigera Hbn.)

Maryland. Gertrude Myers (September 30): More abundant on a farm east of Rockville than for 5 years. Almost every ear of corn is infested, and many ears contain two or three larvae, scattered along the entire length.

- Tennessee. G. M. Bentley (September 12): More prevalent generally over the State in field corn, as well as sweet corn, than it has been for several years.
- Louisiana. C. O. Eddy (September 25): Abundant, particularly on late-planted corn.
- Ohio. T. H. Parks (September 23): Very abundant generally, and has caused very heavy injury to market sweet corn throughout the month.
- Indiana. J. J. Davis (September 23): Rather abundant throughout the State in the last 2 months.
- Illinois. W. P. Flint (September 24): Heavy flight of moths. Some damage has been done in soybean fields. Corn matured early enough so that the damage was not so severe as during some seasons.
- R. A. Blanchard and A. F. Satterthwait (September 24): Damage to sweet corn in the canning-corn areas of central Illinois became severe by the first week in September. Late damage to maturing dent corn is more severe than usual in the State.
- Iowa. H. E. Jaques (September): Light infestations reported from scattered counties throughout the State.
- Missouri. L. Haseman (September 18): Through central Missouri, at Columbia in particular, one of the heaviest infestations for many years is taking place. One report indicated that untreated corn in an experimental plot is damaged 100 percent, and practically no treated ears have entirely escaped worm attack. Recently, hundreds of the moths were observed in lawn grass as the lawn mower was run over it.
- Nebraska. H. D. Tate (September 18): In a number of fields of sweet and field corn examined in Scotts Bluff and Box Butte Counties on September 11 and 12, about 95 percent of the ears were infested.
- Nevada. G. G. Schweis (September 20): Does not seem to be so numerous as in past years, and much sweet corn is now on the market, showing comparatively little injury.
- Oregon. G. Ferguson (September): Very scarce on corn in the Willamette Valley until after the middle of August. Late sweet corn has been very heavily infested, the infestation running as high as 68 percent.
- EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)
- Maine. A. E. Brower (September 18-19): One specimen found at light at Augusta.
- Virginia. H. G. Walker and L. D. Anderson (September 24): Not nearly so abundant as last year on corn and other host plants in Princess Anne County.

Ohio. T. H. Parks (September 22): Rather high population is present in field corn in western Hamilton County, near Cincinnati. Stalk breakage is common. Infestation is heavier than 50 to 75 miles farther north.

Indiana. J. J. Davis (September 23): Showed increase this spring and became conspicuous in many localities of the State, where it had not been noticeable before. At Lafayette, where it had not been common in years past, the first-generation borers caused considerable damage to sweet corn and were very conspicuous in many fields of hybrid corn. Second generation did not show up as conspicuously as anticipated, owing no doubt to unfavorable weather and the firing of corn because of the rather severe drought.

Wisconsin. E. L. Chambers (September 24): Considerable damage in eastern part of the State and found in several new counties. Evidences of second brood developing here and there in infested areas.

COMMON STALK BORER (Papaipema nebris nitela Guen.)

Wisconsin. E. L. Chambers (September 24): Reported from all over southern Wisconsin during the month.

Iowa. H. E. Jaques (September): Light infestation in Henry County, in the lower southeastern part of the State, and in Pocahontas County in the northwestern section. Moderate infestation in O'Brien County, also in the northwestern section.

CORN BORERS (Diatraea spp.)

Kansas. E. G. Kelly (September 25): Injured cornstalks have been received during the month from south and southwestern Kansas, and the species was identified as D. grandiosella Pyar. Damage considerable, up to 50 percent of the stalks breaking.

Texas. W. C. Maxwell (September 22): Larvae and pupa of Diatraea sp. were taken from stalks of dwarf maize near Robstown, with about 10 percent of the stalks in this field being infested. One adult emerging from the pupa closely resembles D. saccharalis F. but identification is not definite.

CORN ROOTWORMS (Diabrotica spp.)

Indiana. J. J. Davis (September 23): D. longicornis Say reported as preventing fertilization of corn on September 17, but exact locality has not been learned.

Iowa. H. E. Jaques (September): Infestations of northern corn rootworm (D. longicornis Say) reported as light in Hardin, Union, and Page Counties.

Nebraska. H. D. Tate (September 18): D. virgifera Lec. and D. filicornis Horn were found working on corn silks in Cheyenne County.

A LEAF BEETLE (Colaspis spp.)

Iowa. C. J. Drake (August 18): Heavy adult populations reported from the northeastern and southeastern parts of the State. In the area between these two sections the adult population was reported as much lighter. Known larval damage to corn during the spring was reported from Black Hawk, Poweshiek, Iowa, and Keokuk Counties.

COMMON RED SPIDER (Tetranychus telarius L.)

Oregon. H. E. Morrison (September 15): Severely attacked a 20-acre field of hybrid field corn and sweet corn at Corvallis. Damage not great, as attack was late. Undersides of the leaves appeared pink because of abundance of spiders, and it was estimated that there were 10,000 to the leaf.

ALFALFA

ALFALFA WEEVIL (Hypera postica Gyll.)

California. A. E. Michelbacher (September 23): Very scarce on September 22, although in 1 field in the San Joaquin Valley 2 adults and 6 larvae were collected per 100 sweeps of the net.

PEA APHID (Macrosiphum pisi Kltb.)

Utah. G. F. Knowlton (September 19): Beginning to increase in abundance in some alfalfa fields in northern Utah, after a generally low population during August.

A PLANT BUG (Lygus elisus Van D.)

Utah. G. F. Knowlton (September 17): Abundant in alfalfa at Riverton.

ALFALFA CATERPILLAR (Colias eurytheme Bdv.)

California. A. E. Michelbacher (September 23): Causing very little damage to alfalfa in the northwestern portion of the San Joaquin Valley on September 12. In every field Apanteles flaviconchae Riley and in some places Apanteles in connection with a wilt disease were holding the pest in check. On September 22 nearly all of the larvae were parasitized by Apanteles. In most fields 96 percent or more of the larvae were parasitized. So complete was parasitization that seldom could a large larva be found.

A WEBWORM (Tetralopha sp.)

Virginia. C. Heinrich (September 15): Cacoecia obsoletana Walk. is causing some injury in Northumberland and Lancaster Counties. Additional injury by a webworm of the genus Tetralopha and a soil-infesting Acrolophus. On September 5 it was found that a disease had killed most of the Tetralopha larvae, and Lespedeza sericea plants were putting out new foliage.

SOYBEAN

VELVETBEAN CATERPILLAR (Anticarsia gemmatilis Hbn.)

North Carolina. C. S. Brinley (September 18): Completely defoliating soybeans on Coastal Plain Experiment Station Test Farm at Willard, Pender County.

B. B. Fulton (September 23): Numerous fields at Swanquarter, Hyde County, have been severely damaged and the fields are entirely defoliated, or nearly so.

South Carolina. W. C. Nettles (September 24): Caused considerable damage to legumes throughout the coastal section.

F. F. Bondy, et al. (September 13): Causing much alarm in the eastern, central, and southern parts of the State. Considerable treatment has been reported from Calhoun and Orangeburg Counties.

Alabama. J. M. Robinson (September 3): Caused damage to soybeans at Auburn and Prattville.

Florida. J. R. Watson (September 22): Adults have been swarming to light by the thousands. Larvae have pretty well ragged velvetbeans and soybeans and stripped the leaves from many fields of peanuts. A fungous disease appeared the first week in September and largely swept off the caterpillars, Baptisia. Indigofera hirsuta is a new host plant.

Mississippi. C. Lyle, et al. (September 24): Damaged soybeans and velvetbeans in the Gulfport area, and soybeans in Clay, Forrest, Jones, Oktibbeha, Perry, and Stone Counties.

Louisiana. C. O. Eddy (September 25): Soybeans were defoliated throughout practically all of Louisiana during the early part of September, following a period of spotted destruction in August.

KUDZU

LESSER CORNSTALK BORER (Elasmopalpus lignosellus Zell.)

Georgia. T. L. Bissell (September 3): Larvae are killing seedling kudzu plants in a nursery planting at Soperton, in southeastern Georgia.

SORGHUM

SORGHUM WEBWORM (Celanâ sorghiella Riley)

South Carolina. W. C. Nettles (September 24): Damage noted in Allendale County, in the coastal section.

Texas. W. C. Maxwell (September 22): Some damage is being done to the late crop of grain sorghum in Nueces County, although infestation is not heavy as on the early crop.

SORGHUM MIDGE (Contarinia sorghicola Coq.)

Georgia. T. L. Bissell (September 18): Grain sorghum at Experiment was ruined. Midges and a small chalcid parasite now emerging from seed heads.

LEAF-FOOTED BUG (Leptoglossus phyllopus L.)

Texas. W. C. Maxwell (September 22): Several bugs congregated on the heads of grain sorghum near Robstown, most of the individuals being in the process of mating. Inspection indicated that all of the specimens in the immediate vicinity had congregated at this point.

RICE

ASIATIC RICE BORER (Chilo simplex Butl.)

Hawaii. R. G. Oakley (September 24): Collections were very poor in rice maturing in April and May, with field infestations approximating possibly 1 percent. Another nearby field in June, however, proved to be so heavily infested that any profit derived therefrom by the owner is doubtful. Average infestation was at least 20 percent. In spots practically 100 percent of the stems seemed to be infested.

F R U I T I N S E C T S

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Tennessee. G. M. Bentley (September 23): Caused appreciable injury to peach and cherry trees in the proximity of wild-plum thickets.

Mississippi. C. Lyle, et al. (September 25): Specimens received from Grenada County. Reported as injuring peach trees in Hinds, Monroe, and Tippah Counties.

Washington. E. J. Nowcomer (September 3): Adults found boring into buds of healthy cherry tree. (Det. by M. W. Blackman.)

ROUNDHEADED APPLE TREE BORER (Saperda candida F.)

Alabama. J. M. Robinson (September 19): Reported on August 16 as causing damage to an apple tree at Auburn.

Missouri. L. Haseman (September 26): Observations during the month in central Missouri indicate that the borer is much less in evidence than during former years. On September 15, young larvae had already developed tunnels a few inches in length, heading for the crowns of trees for wintering.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Ohio. E. W. Mendenhall (September 10): Bad on English elm tree stock in a nursery near Lancaster, Fairfield County.

Illinois. S. C. Chandler (September 23): Favorable weather conditions have resulted in a big increase on both apple and peach in southern Illinois.

Wisconsin. E. L. Chambers (September 24): Reported from several new locations, and is increasing in untreated areas.

Texas. R. K. Fletcher (September 1): Heavy infestation on pear in La Salle County.

WHITE PEACH SCALE (Aulacaspis pentagona Targ.)

Georgia. O. I. Snapp (September 24): Infestation has developed on young peach trees in the experiment station orchard at Fort Valley, central Georgia.

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

Maine. Maine Agr. Expt. Sta. (August): Late infestation is moderate and general in York County. Heaviest infestation observed in 5 years or more on neglected trees at Monmouth, Kennebec County.

New York. D. W. Hamilton (September 23): Peak captures of first-brood adults in bait traps occurred the week of August 3 to 9. Second-brood larval entrances continued to be numerous at Poughkeepsie through August 23 and then tapered off. Although moths were captured in bait traps through September 7, comparatively few were captured after September 1. Injury in the Hudson River Valley in commercial orchards is probably not as severe as in 1940 and definitely less than in 1939.

Virginia. A. M. Woodside (September 23): Heavy increase in damage to apple in Augusta County, owing to favorable weather conditions throughout July and August. Relatively heavy second-brood flight late in August.

Tennessee. G. M. Bentley (September 20): Second brood did more damage to late apple crop than it has for several years, especially in untreated areas.

Ohio. T. H. Parks (September 22): Very abundant on apples in the southern part of the State. Damage severe in a few central and southern orchards where late hatching larvae were entering the fruits until harvesttime.

Indiana. L. F. Steiner (September 24): After a severe second-brood attack at Vincennes early in July, a continuously heavy third-brood attack extended from early in August until mid-September, with the main peak

of hatch early in September. Infestation is one of the most severe on record. From 50- to 95-percent crop damage in many treated orchards in southern Indiana. Few commercial orchards have less than 25-percent injured fruit, and in one well-treated orchard in Knox County more than 50 percent of the apples were damaged.

Illinois. S. C. Chandler (September 23): A heavy third brood during August and well into September has resulted in a very heavy infestation of many apple orchards all over southern and western Illinois. Carry-over will be great.

Kentucky. L. F. Steiner (September 24): From 50- to 95-percent damage has occurred in northern Kentucky.

Minnesota. A. C. Hodson (September 12): Reported as moderately abundant, but less so than for several years.

Missouri. L. Haseman (September 26): Third-brood larvae have been unusually abundant throughout the apple-growing sections of the State, and growers are complaining more than for years. In central Missouri last moths were taken in bait jars on September 13.

Utah. H. F. Thornley (August 27): Apples in an orchard at New Harmony have recently suffered numerous stings.

Nevada. G. G. Schweis (September 20): Severe infestation observed in apples and pears.

Washington. M. A. Yothers, et al. (September 20): Last pupation for the season at Yakima occurred between August 30 and September 6, during which time only 1.8 percent pupated. Unfavorable weather conditions have greatly reduced activity, resulting in less infested apple fruit than usual. During the 1941 season considerable numbers of larvae have been attacked and killed by an unidentified organism, apparently a bacterium or virus, which kills quickly and causes the larvae to become flaccid and fall to pieces within a few hours after they have been able to crawl into cocooning quarters.

UNSPOTTED TENTIFORM LEAF MINER (Ornix geminatella Pack.)

North Carolina. C. F. Smith (August 15): At West End, many of the apple leaves were distorted, having from 2 to 6 mines. Light damage.

APPLE MAGGOT (Rhagoletis pomonella Walsh)

Minnesota. A. C. Hodson (September 12): Outbreak is causing heavy damage in Minnetonka area and in neglected orchards in other parts of the State.

LEAFHOPPERS (Cicadellidae)

Virginia. A. M. Woodside (September 23): Erythroneura hartii Gill. is very common in some orchards in Augusta County, comprising more than 99 per cent of the leafhopper population on many apple trees.

North Carolina. Z. P. Metcalf (September 26): Leafhoppers are not very serious in the Sand Hills; but more so in the mountains, the most abundant and injurious species being E. hartii. Damage much less than in the average season.

Utah. G. F. Knowlton (September 17): Leafhoppers in considerable numbers are attacking apple foliage on a farm at Orem.

WOOLLY APPLE APHID (Eriosoma lanigerum Hausn.)

Mississippi. N. L. Douglass (September 25): Injury to apple trees was observed in Grenada County on September 5.

Louisiana. D. L. Van Dine (September 17): Specimens were collected from apple on September 10 at Mound.

APPLE APHID (Aphis pomi Deg.)

Utah. G. F. Knowlton (September 17): Heavily infesting young apple trees at north Ogden.

COMSTOCK'S MEALYBUG (Pseudococcus comstocki Kuw.)

Rhode Island. B. Eddy (September 8): Several umbrella catalpas in Providence and Pawtucket are heavily infested.

Connecticut. P. Garman (September 3): Increasing on pears in Greenwich despite treatment.

New Jersey. J. L. King (September 5): Specimens found on ornamental Taxus at Moorestown. (Det. by H. Morrison.)

SCURFY SCALE (Chionaspis furfura Fitch)

Virginia. A. M. Woodside (September 23): Some apple fruit infestation indicates that a partial second brood has occurred in Augusta County.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Wisconsin. E. L. Chambers (September 24): Very abundant on apples in the southern half of the State.

PEACH

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Connecticut. P. Garman (September 15): Infestation of peaches is much less in all counties than at any time during the last 5 years.

Tennessee. G. M. Bentley (September 22): Less injury generally to peaches and plums than in most years since the introduction of this insect into the State. Rarely found in nursery stock. Late apples have shown a light injury in a few commercial orchards where peaches are grown as interplantings.

Mississippi. C. Lyle, et al. (September 25): Injured peach twigs have been received from Coahoma and Newton Counties. Injury has also been observed in the Grenada and Jackson districts and in Holmes and Monroe Counties.

Louisiana. C. O. Eddy (September 25): Moths are still active in peaches where growth has continued late.

Missouri. L. Haseman (September 26): Late peaches in central Missouri have shown severe injury, and maturing larvae were still present in peach on September 20. Moths in small numbers were taken in bait jars in central Missouri during the third week in September.

PEACH BORER (Conopia exitiosa Say)

Michigan. R. Hutson (September 29): Reported from Newport, Detroit, and Utica.

PEACH TWIG BORER (Anarsia lineatella Zell.)

Colorado. L. Anderson (September 4): Found feeding on peaches where they cause an injury similar to that of codling moth on apples. Considerable injury caused in the Palisade district. (Det. by C. Heinrich.)

California. S. F. Bailey (September 24): Very severe on almonds during the summer. As a result of the very light crop, the larvae consequently concentrated on the soft-shell nuts, injuring in many cases from 25 to 50 percent of the crops in the Sacramento Valley.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia. O. I. Snapp (September 19): Marked increase in number of adults in commercial peach orchards at Fort Valley, central Georgia, during the period August 20-22, owing to emergence of second generation. Most of these had left the orchards for places of hibernation by September 11. Hibernating population is heavier than that of an average year.

Missouri. L. Haseman (September 26): Occasional half- to two-thirds-grown larvae taken in peaches around the middle of September in central Missouri, evidently indicating late second brood.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

Idaho. J. F. Cooper (September 19): Adults and nymphs taken on pear in Boundary County. (Det. by P. W. Oman.)

Washington. J. F. Cooper (September 10): Collected at Orondo, Douglas County. (Det. by P. W. Oman.)

L. G. Smith (September 8): Infestations reported from Dayton and Starbuck areas, in Columbia County, and northeast of Walla Walla, in Walla Walla County, during the summer.

PEAR SLUG (Caliroa cerasi L.)

Massachusetts. J. V. Schaffner, Jr. (September 24): Foliage of many pear and cherry trees ruined in the vicinity of Cambridge.

PEAR LEAF BLISTER MITE (Eriophyes pyri Pgst.)

Indiana. J. J. Davis (September 23): Destructive at Bridgeport early in September.

Washington. M. A. Yothers and F. W. Carlson (September 18): Found in considerable numbers in dead buds of apples in a number of orchards. No characteristic foliage blisters observed. The worst infestation was in an orchard where there had been a serious attack of the apple powdery mildew.

RASPBERRY

RED-NECKED CANE BORER (Agrilus ruficollis F.)

Wisconsin. E. L. Chambers (September 24): Very abundant in northwestern part of the State.

RASPBERRY CANE BORER (Oberea binaculata Oliv.)

Wisconsin. E. L. Chambers (September 24): Very abundant generally throughout the State during September.

AN APEID (Aphis varians Patch)

Utah. G. F. Knowlton (September 19): Curling apical foliage of black currant at Brigham.

BLACK-HORNED TREE CRICKET (Oecanthus nigricornis Walk.)

Wisconsin. E. L. Chambers (September 24): Observed damaging raspberry plantation in Milwaukee County during the month.

GRAPE

GRAPE LEAFHOPPER (Erythroneura comes Say)

Virginia. A. M. Woodside (September 6): Fairly common on grape in Augusta County. Damage light.

North Carolina. Z. P. Metcalf (September 26): Late generation was the worst that reporter has ever seen on bunch grapes in the western part of the State. Not so serious on the muscadine type in the eastern part of the State as in the average year.

Georgia. T. L. Bissell (September 8): Very abundant in the muscadine-grape planting, and has caused heavy defoliation of some vines.

Nebraska. H. D. Tate (September 18): Samples of infested woodbine were received from Hall, Chase, and Grant Counties on August 21 and 23, and September 8, respectively.

Utah. G. F. Knowlton (September 24): Injury to grape and Virginia creeper foliage has increased markedly in northern Utah during the last few weeks.

California. P. Simmons (August): Scattered damage by grape leafhoppers was in evidence during the latter half of the month in Fresno County, but no heavy general infestation. Extensive browning and drying of grape foliage seen on August 15 in a wine-grape vineyard. Common species in this area is E. elegantula Osb.

A SPITTLEBUG (Clastoptera lawsoni Doer.)

Utah. G. F. Knowlton (September 2): Specimens from Pintura, which are damaging the fruits and also heavily attacking tendrils of grapes. (Det. by P. W. Oman as probably C. lawsoni Doer.)

GRAPE LEAF FOLDER (Desmia funeralis Hbn.)

Missouri. L. Haseman (September 26): Rather severe infestation in central Missouri has occurred since early in September on certain grape varieties, as well as on wild grapes and Virginia creeper.

GRAPE BERRY MOTH (Polychrosis viteana Clem.)

Georgia. T. L. Bissell (September 22): Scuppernong fruits sent from Atlanta on August 29 were infested by the grape berry moth and the grape curculio (Craponius inaequalis Say). A heavy drop of fruit was reported.

GRAPE THRIPS (Drepanothrips reuteri Uzel)

California. O. G. Bacon (August 22): Young grape rootings are being stunted in a planting east of Sanger.

PECAN AND WALNUT

WALNUT CATERPILLAR (Datana integerrima G. & R.)

Virginia. A. M. Woodside (September 23): A few isolated colonies were observed early in August on black walnut in Augusta County, causing very light damage.

South Carolina. F. Sherman (September 22): Some defoliation of pecan trees is occurring at Clemson.

Mississippi. C. Lyle, et al. (September 25): Reported as causing some injury to pecan trees in Jones, Oktibbeha, and Tippah Counties, where they were more numerous than last year.

Wisconsin. E. L. Chambers (September 24): Very abundant throughout the month, stripping many walnut trees in the southern half of the State.

PECAN CARPENTER WORM (Cossula magnifica Stkr.)

Georgia. O. I. Snapp (September 23): A number of moths were observed on wing in pecan trees today near Fort Valley, central Georgia.

HICKORY SHUCK WORM (Laspeyresia caryana Fitch)

Mississippi. T. F. McGehee (September 25): Injuring pecan nuts along the Gulf coast.

PECAN NUT CASEBEATER (Acrobasis caryae Grote)

Texas. R. K. Fletcher (September 25): Found on pecan in Navarro County on August 25.

TWIG GIRDLER (Oncideres cingulatus Say)

Florida. A. M. Phillips (September 15): Abundant and causing considerable damage in some pecan orchards in the vicinity of Monticello, northern Florida.

PECAN WEEVIL (Curculio caryae Horn)

Georgia. T. L. Bissell (September 4): Large numbers jarred from pecan trees at Yatesville, but none could be found in one orchard at Milner. Weevils are ovipositing at Yatesville.

Missouri. L. Haseman (September 26): Scaly-bark hickory nuts from some trees in central Missouri show from 10 to 25 percent of the nuts infested, whereas the nuts on nearby trees show practically no infestation. Infestation seems to be worse than usual.

APHIDS (Aphidae)

Georgia. O. I. Snapp (September 23): Very heavy infestation of giant hickory aphids (Longistigma caryae Harr.) observed today on pecan trees north of Fort Valley, central Georgia. Many branches had been killed.

Mississippi. D. W. Grines (September 25): Heavy damage to pecan foliage by the black pecan aphid (Melanocallis caryaefoliae Davis) was observed in one locality in Holmes County.

Utah. G. F. Knowlton (September): Monellia caryae Monell is causing a moderate infestation of black walnut at Orem.

PECAN PHYLLOXERA (Phylloxera devastatrix Perg.)

Mississippi. D. W. Grines (September 25): Signs of severe damage to pecan trees earlier in the season were observed in Holmes and Coahoma Counties.

WALNUT HUSK FLY (Rhagoletis completa Cress.)

California. H. J. Ryan (September 17): Larvae were found in husks of Persian walnuts growing at Montrose, Los Angeles County. First record of the fly in this area.

CITRUS

FLORIDA RED SCALE (Chrysomphalus aonidum L.)

Florida. M. D. Leonard (September 16): Heavy infestations reported on citrus throughout Lake County, and particularly in the Umatilla section. Control measures are being carried on in Polk and Volusia Counties.

PURPLE SCALE (Lepidosaphes beckii Nown.)

Florida. M. D. Leonard (September 14): Heavy infestations occurring on citrus in Lake, Volusia, and Polk Counties.

BLACK SCALE (Saissetia oleae Bern.)

California. R. S. Woglum (September): Weather conditions have been very favorable for development. Mortality has been light.

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Florida. J. R. Watson (September 22): A heavy fall brood began to emerge in the central part of Florida about September 10.

SIX-SPOTTED MITE (Tetranychus sexmaculatus Riley)

California. R. S. Woglun (September): Rapidly extending range. Now quite generally distributed over the lemon acreage of Ventura and Santa Barbara Counties. Scattered infestations are to be found through the San Fernando Valley, in southern Orange County, and in various parts of San Diego County.

CITRUS RUST MITE (Phyllocoptes oleivorus Ashm.)

Florida. M. D. Leonard (September 14): Continues to be active in Orange, Polk, Volusia, and Lake Counties.

TROPICAL FRUITS

A WHITEFLY (Trialeurodes variabilis Quaint.)

Florida. M. R. Osburn (September 13): Damaging infestations are present in the Fort Pierce vicinity, on the lower East Coast, on papaya.

GREEN SHIELD SCALE (Pulvinaria psidii Mask.)

Florida. M. R. Osburn (September 20): Heavy infestations are present on Ficus utilis and F. aurea in Fort Pierce and Vero Beach localities on the lower East Coast.

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

Florida. A. M. Phillips (September 12): Light infestation observed in tung-oil grove near Monticello, Jefferson County.

COCONUT SCALE (Aspidiotus destructor Sign.)

Florida. M. R. Osburn (September 18): Infestations found on coconut palms in Miami and Key West, along the lower East Coast.

T R U C K - C R O P I N S E C T S

CUCUMBER BEETLES (Diabrotica spp.)

Illinois. W. P. Flint (September 24): D. duodecimpunctata F. is causing damage to late string beans throughout central Illinois. In many home gardens and commercial plantings 95 percent of the pods were eaten into before they were ready for harvesting.

Wisconsin. E. L. Chambers (September 24): D. duodecimpunctata and D. vittata F. are very abundant and doing serious damage to cucurbits and various garden flowers in the southern half of the State.

Iowa. H. E. Jaques (September): Light to moderate infestations of the striped cucumber beetle are present in scattered counties throughout the State.

Nebraska. H. D. Tate (September 18): D. vittata was reported to be attacking gourd vines in Douglas County on August 18.

BLISTER BEETLES (Epicauta spp.)

Mississippi. C. Lyle, et al. (September 25): Specimens of the margined blister beetle (E. marginata F.) were received from Holmes, Oktibbeha, and Tallahatchie Counties, late in August and early in September. Eggplants, tomatoes, and sunflowers were being injured. Reports of injury to soybeans and late tomatoes in the Jackson district have also been received. Specimens of the southern striped blister beetle (E. lemniscata F.) were received from Lauderdale County, where beans were being injured. Also reported as injuring tomato plants elsewhere in the Meridian district.

A SCARABAEID (Pleurophorus caesus Creutz)

Washington. L. G. Smith (September 16): Specimens received with report that they were infesting tomato and cabbage transplants in a hotbed. (Det. by M. H. Hatch.)

TOBACCO BUDWORM (Heliothis virescens subflexa Guen.)

Minnesota. H. E. Milliron (September 17): Larvae feeding on fruit and foliage of cultivated ground cherry (Physalis pubescens) and to a lesser degree on P. ixocarpa in the Saint Paul and Minneapolis district. Moderately abundant generally; very abundant in restricted areas, destroying 30 percent of the fruits of P. pubescens.

CORN EARWORM (Heliothis armigera Hbn.)

Virginia. H. G. Walker and L. D. Anderson (September 24): Eggs are moderately abundant in a great many bean fields in the Norfolk area and on the Eastern Shore of Virginia. Rather severely damaged a planting of dahlias near a patch of sweetcorn in Norfolk, and have destroyed practically all of the flowering buds on some of the plants.

Kansas. H. R. Bryson (September 20): Caused considerable injury to late beans and to tomatoes at Manhattan.

Utah. G. F. Knowlton (August 26): Infesting 20 percent of the tomatoes examined in a home garden at Wellsville. (September 17): Large percentage of tomatoes at Spanish Fork were reported as infested at

canning time. This was followed by a marked decrease, with a recent building up of infestations. One field examined at Salem showed 13 percent of the fruits infested.

FALSE CHINCH BUG (Nysius ericae Schill.)

Virginia. H. G. Walker and L. D. Anderson (September 24): Several fields of turnip greens in Hansemond County were found to be rather heavily infested on September 15.

SOUTHERN GREEN STINKBUG (Nezara viridula L.)

Texas. K. P. Ewing, et al. (August 30): Extremely abundant in a field of peas examined on a truck farm. Literally millions of nymphs were found per acre.

H. K. Fletcher (September 25): Ruined many plantings of black-eyed peas, beans, and collards and other greens in eastern and central Texas during August and September.

GARDEN FLEA HOPPER (Halticus citri Ashm.)

Maryland. W. M. Davidson (September 10): Much more abundant at Beltsville than in previous summers and autumns on a wide range of cultivated and wild plants.

South Carolina. W. C. Nettles (September 24): Climbing snap beans are being damaged in Sumter County.

Alabama. H. C. Young (August 27): Found feeding on peanuts in rearing cages at Florida. No reports of damage under field conditions. (Det. by H. G. Barber.)

Missouri. A. C. Burrill (August 25): Stippling grass and leaves. (Det. by H. G. Barber.)

POTATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

Maine. Maine Agr. Expt. Sta. (August): Still breeding late in August in Hancock County. Outbreak and severe injury, reported in mid-August in Androscoggin and Sagadahoc Counties. Generally numerous, with moderate injury in Washington County.

Iowa. H. E. Jaques (September): Light to moderate infestations in scattered counties throughout the State.

Missouri. L. Haseman (September 26): A few half-grown larvae observed feeding on horse nettles in central Missouri early in September.

Minnesota. H. E. Milliron (September 17): Scarce in the Saint Paul-Minneapolis area. Larvae occasionally encountered in greatly reduced numbers on potatoes in September.

Idaho. J. R. Douglass (September 2): Specimens collected at Twin Falls on August 23. (Det. by H. S. Barber.)

Utah. G. F. Knowlton (September 24): Injury was less severe in the small area infested in Weber and northern Davis Counties. No extension of range has been noted in recent years.

FLEA BEETLES (*Halticinae*)

Maine. Maine Agr. Exp. Sta. (August): Epitrix cucumeris Harr. numerous at Mars Hill, Aroostook County, and causing severe injury. Few, with moderate injury at Stacyville; numerous with moderate injury in Sherman and other southern towns. General infestation began in mid-August, with severe injury showing on the "islands" left in killing the tops for experimental seed program. Numerous with moderate injury in western part of Waldo County. Just beginning to appear in towns of Unity, Troy, Burnham, and Thorndike. Generally numerous with moderate injury in Penobscot County.

Nevada. G. G. Schweis (September 20): Fleabeetles reported as damaging potato foliage in Smith Valley.

POTATO STALK BORER (Trichobaris trinotata Say)

Missouri. P. C. Stone (September 26): Stems of horse nettle in central Missouri are 95 percent infested.

POTATO TUBER WORM (Gnorimoschema operculella Zell.)

Mississippi. C. Lyle, et al. (September): Specimens were received from four farms in Harrison County.

Utah. G. F. Knowlton (September 20): No reports of infestation or injury have been received by the writer during 1940 or 1941.

California. R. E. Campbell (September 15): Severe damage to potato foliage in northeastern Santa Barbara County, southern California. Several fields are so serious that plants have been killed. Also several fields with heavy damage to tubers, enough so that one field was abandoned entirely.

ALFALFA LOOPER (Autographa californica Speyer)

Nevada. G. G. Schweis (September 20): Migrated from poor stands of alfalfa to potato fields in Lyon County, causing serious injury to the stands of potatoes.

POTATO LEAFHOPPERS (Empoasca spp.)

- Minnesota. E. E. Milliron (September 17): E. fabae Harr. is moderately abundant in the area around Saint Paul and Minneapolis, and is especially prevalent on potatoes and beans.
- Iowa. H. E. Jaques (September): Light potato leafhopper infestations in a few counties in the southern half of the State, with from light to moderate infestations in several northern counties.
- Utah. G. F. Knowlton (September 19): E. filamenta De L. is abundant and spotting potato foliage near Salt Lake City.
- California. R. E. Campbell (September 15): E. abrupta De L. is very abundant in potato fields in Cuyama Valley, northeastern Santa Barbara County, where obvious damage is being caused. (Det. P. W. Oman.)

POTATO PSYLLID (Paratrioza cockerelli Sulc)

- Nebraska. H. D. Tate (September 18): Collected from potato, tomato, and pepper plants in Scotts Bluff County on September 11 and 12. Severe damage to potatoes evident in many untreated fields.

LEAF-FOOTED BUG (Leptoglossus phyllopus L.)

- Texas. R. K. Fletcher (September 25): Causing considerable damage to tomatoes in eastern and central Texas, and has been reported throughout August and September.

A TOMATO MITE (Phyllocoptes destructor Keifer)

- California. S. F. Bailey (September 24): A new species which has spread rapidly in the State since it was first discovered in May 1940. Now found throughout the Sacramento and San Joaquin Valleys and west to Santa Clara and Napa Counties. Estimated that over half of the tomato acreage is infested in varying degrees.

BEANS

MEXICAN BEAN BEETLE (Epilachna varivestis Muls.)

- Maine. Maine Agr. Exp. Sta. (August): General outbreak, with severe injury in Franklin, Androscoggin, Sagadahoc, and York Counties. Severe injury around Augusta and southward, in Kennebec County, with few beetles and moderate injury in remainder of the county. Negligible injury in Waldo County, but there has been distinct increase in infestation this summer. One case of severe injury in Penobscot County.
- J. E. Hawkins (September 10): Many newly emerged first-generational beetles present on beans at Highmoor Experimental Farm. Very little food left. A few larvae and pupae are present.

Virginia. H. G. Walker and L. D. Anderson (September 24): Several fields of beans in the Norfolk area were observed to be heavily infested on September 22, while many other fields were almost free from injury.

Georgia. T. L. Bissell (August 26): In experimental plots at Tifton, Alyce clover (Alysicarpus vaginalis) seems to be the favored host plant. Leaves conspicuously skeletonized, though no dead plants are present. Only new adults observed.

Alabama. J. M. Robinson (September 19): Abundant on snap beans and soybeans at Auburn.

Mississippi. C. Lyle, et al. (September 25): Specimens received from Attala, Oktibbeha, and Winston Counties late in August and in September. Snap beans and lima beans were being injured. Considerable damage to untreated beans has been observed in the northeastern counties, the Meridian area, and in Choctaw, Jones, Leake, Montgomery, Scott, and Webster Counties.

Nebraska. H. D. Tate (September 18): Observed in a number of fields in Scotts Bluff County on September 11, and serious damage had resulted in some localities.

A WHITEFLY (Trialeurodes abutilonea Hald.)

Virginia. L. W. Brannon (September 3): Present in large numbers in a field of summer snap beans on August 13 at Norfolk. Damage appeared to be light. (Det. by L. M. Russell.)

THREE-CORNERED ALFALFA HOPPER (Stictocophala festina Say)

Georgia. T. L. Bissell (September 20): Plentiful on a few bean plants in the greenhouse. Now emerging as adults.

Texas. K. P. Ewing, et al. (August 30): Extremely abundant and doing severe damage to young bean plants on a truck farm at Waco. Injury consisted of completely girdling the plant just above the ground with egg punctures. Dozens of eggs per plant were found in the girdle, which practically stopped growth.

A RED SPIDER (Tetranychus sp.)

California. J. C. Elnore (September 18): Very common on lima beans in the Santa Ana area of Orange County, where many of the plants are almost defoliated.

CABBAGE

IMPORTED CABBAGE WORM (Pieris rapae L.)

- Maine. Maine Agr. Expt. Sta. (August): Numerous, with moderate to severe injury in Androscoggin and Sagadahoc Counties. Generally numerous, with negligible injury, in Aroostook County.
- Minnesota. H. E. Milliron (September 17): Still common on cabbage and cauliflower in Minneapolis and Saint Paul, but population is markedly reduced, as compared with July.
- Iowa. H. E. Jaques (September): Light to moderate infestations in scattered counties throughout the State.
- Missouri. L. Haseman (September 26): Earlier heavier infestations have largely disappeared from the garden. Since the middle of September, in the central part of the State, cabbage and turnips are showing a severe infestation by the southern cabbage worm (P. protodice Bdv. & Lec.)

CABBAGE LOOPER (Autographa brassicae Riley)

- Virginia. H. C. Walker and L. D. Anderson (September 24): Has been very abundant in a great many cabbage and collard fields in Norfolk and Princess Anne Counties, and on the Eastern Shore of Virginia during the last month.
- Minnesota. H. E. Milliron (September 17): Very abundant and doing considerable damage to cauliflower in Minneapolis and Saint Paul.
- Missouri. L. Haseman (September 26): Cabbage, broccoli, and kale in the central part of the State have been very heavily infested since early in September, and only an occasional larva has shown either disease or the typical hymenopterous parasitization.

CABBAGE WEBWORM (Hellula undalis F.)

- South Carolina. W. C. Nettles (September 24): Abundant, at least in the eastern part of the State.
- Mississippi. C. Lyle, et al. (September 25): Reported as injuring collards in Wayne County and turnips in the Meridian area.

CROSS-STRIPED CABBAGE WORM (Evergestis rimosalis Guen.)

- Alabama. J. M. Robinson (September 19): Reported as causing damage to collards at Auburn on August 16.
- Mississippi. D. W. Grimes (September 25): Rather heavy damage to collards observed in a garden in Holmes County.

CABBAGE APHID (Brevicoryne brassicae L.)

Minnesota. H. E. Milliron (September 15): Very abundant on cauliflower and cabbage in Minneapolis and Saint Paul. Probably the most serious pest on cauliflower since August 15.

HARLEQUIN BUG (Murgantia histrionica Hahn)

Virginia. H. G. Walker and L. D. Anderson (September 24): Reported as destroying cabbage in a garden in Norfolk. Observed in a few fields of crucifers, but rather scarce generally in the Norfolk area.

L. A. Hetrick (September 29): Adults are abundant and feeding on ragweed and goldenrod in Northumberland County. The concentration of the bugs was not near an area where crucifers had been grown recently.

Alabama. J. M. Robinson (September 19): Abundant at Auburn and Prattville.

Mississippi. C. Lyle, et al. (September 25): Reported as abundant in the Grenada, Jackson, and Meridian areas, with some damage in Jones and Holmes Counties.

SQUASH

SQUASH BUG (Anasa tristis Deg.)

Maine. Maine Agr. Expt. Sta. (August): Generally numerous, with moderate injury in Franklin, Androscoggin, and Sagadahoc Counties.

A. E. Brower (September): Continues to be abundant and troublesome at Augusta.

Wisconsin. E. L. Chambers (September 24): Very abundant and doing serious damage in all truck crop areas of the State.

Minnesota. H. E. Milliron (September 17): Nymphal population is greatly reduced in Minneapolis and Saint Paul, but adults are still moderate to very abundant on pumpkins and squash.

Iowa. H. E. Jaques (September): Light to heavy infestations in scattered localities throughout the State.

Nebraska. H. D. Tate (September 18): Reported as present in Douglas, York, and Saline Counties on August 18 and 26, and September 12, respectively.

Kansas. H. R. Bryson (September 23): Less abundant at Manhattan than last year. Reported as abundant at Whitewater.

Utah. G. F. Knowlton (September 17): Damaging squash at Orem.

Washington. L. G. Smith (September 8): Reported as attacking squash near Toppenish in Yakima County on June 21, causing many plants to wilt and die. Eggs were noted in abundance on June 27, but no nymphs were present. Eggs were found to be hatching on July 7. First report of infestation in Starbuck, Columbia County, was received on July 7. On August 14 it was reported that bugs were attacking watermelon at Grandview and Mabton, in Yakima County, the infestation being moderate but greater than last year.

MELONS

MELON APHID (Aphis gossypii Glov.)

Louisiana. E. H. Floyd (September 25): This aphid is present and building up in great numbers on cucumbers in the Hammond-Ponchatoula truck-crop area.

Minnesota. H. E. Milliron (September 17): Moderately abundant on muskmelon and squash during the second half of August around Saint Paul and Minneapolis.

Utah. G. F. Knowlton (September 19): Several cantaloup vines at Willard were damaged.

ASPARAGUS

ASPARAGUS BEETLES (Crioceris spp.)

Minnesota. H. E. Milliron (September 17): Adults of C. asparagi L. are very abundant in the Minneapolis-Saint Paul area, with larvae scarce to moderately abundant. Early damage to large asparagus stems very conspicuous at this time. C. duodecimpunctata L. is moderately abundant in Minneapolis and Saint Paul.

Iowa. H. E. Jaques (September): Light infestation of C. asparagi reported from Pocahontas County.

Utah. G. F. Knowlton (September 17): C. asparagi slugs are abundant, injuring asparagus at North Farmington.

ASPARAGUS MINER (Agromyza simplex Loew)

Minnesota. H. E. Milliron (September 17): Very abundant in certain areas. Richfield station of Minneapolis, 90 percent of all the stalks showing characteristic damage. Injury to new growth was particularly noticeable during the second half of August.

CELERY

CELERY LEAF TIER (Phlyctaenia rubigalis Guen.)

Minnesota. H. E. Milliron (September 17): Moderate to very abundant on celery in the Minneapolis-Saint Paul area.

PEANUTS

CORN EAR WORM (Heliothis armigera Hbn.)

Virginia. F. W. Poos (August 29): Larvae much more abundant than usual on certain varieties of Spanish peanuts at Holland.

Georgia. T. L. Bissell (August 27): Larvae present on peanuts at Americus. Feeding conspicuous, although there is not much damage.

ONIONS

ONION THRIPS (Thrips tabaci Lind.)

Minnesota. H. E. Milliron (September 17): Very abundant in restricted sections of the Minneapolis-Saint Paul area. Early damage to onions very conspicuous on late stands. Heavy infestations noted on cauliflower and cabbage, especially where grown very close to infested onions.

Utah. G. F. Knowlton (September 18): Thrips caused moderate injury to white sweet Spanish onions at North Farmington, and less injury to yellow sweet Spanish onions.

Oregon. G. Ferguson (September): Unusually light injury on fall celery, owing to early fall rains. Infestation on onions throughout the year has been below average in the Willamette Valley.

California. S. F. Bailey (September 24): Rather serious infestation occurred in the Sutter Basin district of Sutter County during August.

CARROT

CARROT WEEVILS (Listronotus spp.)

Kansas. H. R. Bryson (August 27): L. oregonensis Lec. destructive to carrots in the vicinity of Wathena during the season. Eighty adults were reared from a small box of infested carrots. Seven larvae were found in one root.

Minnesota. H. E. Milliron (September 17): L. latiusculus Boh. is scarce at New Canada, Ramsey County. Small percentage of bunch carrots is being damaged.

HOPS

HOP APHID (Phorodon humuli Schr.)

Oregon. H. E. Morrison (September): Peak of infestations occurred in the Willamette Valley about the middle of June and another peak occurred about the middle of September. Only one peak occurred in 1940, and that in October. A hot spell during the middle of July in which temperatures in the hop yards reached 110° F., was credited with destroying 99 percent of the aphids present.

STRAWBERRY

STRAWBERRY LEAF ROLLER (Ancylis comptana Froel.)

Wisconsin. E. L. Chambers (September 24): Reported as having practically killed one strawberry field in Dane County.

STRAWBERRY CROWN BORER (Tyloderma fragariae Riley)

Tennessee. G. M. Bentley (September 23): Approximately 2-percent infestation has been found in many strawberry fields grown in the proximity of abandoned strawberry fields that had not been plowed under during the spring and early summer months.

PEPPER

PEPPER WEEVIL (Anthonomus eugenii Cano)

Texas. W. C. Maxwell (September 22): Approximately 50 percent of the pods in a small field of hot peppers in Mueces County are infested, large pupae, and adults being present in the pods. Some pods have four individuals present. In the same vicinity during 1940 a field of sweet peppers was reported as having been seriously damaged.

TOMATO WORM (Protoparce sexta Johan.)

Georgia. A. C. Dormincy (September 4): Reported as causing serious damage to pepper plants at Ashburn. Specimens collected August 30. (Det. by C. Heinrich.)

SWEETPOTATO

TORTOISE BEETLES (Cassidinae)

Mississippi. L. J. Goodgame (September 25): Have fed heavily on sweetpotato plants in Chickasaw and Monroe Counties.

TOBACCO

TOBACCO FLEA BEETLE (Epitrix parvula F.)

Pennsylvania. B. F. Coon (September 15): Population has been light at Lancaster during the season. Following the tobacco harvest, adults are congregating and feeding heavily on sucker growth in the field.

TOBACCO WORM (Protoparce quinquemaculata Haw.)

Pennsylvania. B. F. Coon (September 19): First-generation moths began emerging on August 1 at Lancaster and increased rapidly in population to a peak on August 10. Population was high until September 8, and since that time has been decreasing. Moth capture reveals 91 percent P. quinquemaculata and 9 percent P. sexta Johan.

C O T T O N I N S E C T S

BOLL WEEVIL (Anthonomus grandis Boh.)

North Carolina. J. O. Rowell (September 22): Weevils plentiful on September 19 in a number of cottonfields in eastern North Carolina, where they severely damaged squares and young cotton bolls. Rather high population will go into hibernation, at least in the eastern cotton-producing counties. Central-western and the lower western Piedmont cotton-producing counties seldom experience damage, and there was practically no damage in this area this year. Most of the damage in the State occurred during a rainy period early in July.

South Carolina. C. F. Rainwater (September 20): Very numerous in Florence County in second-growth squares, which dry weather is keeping from forming as fast as they might under normal conditions.

Georgia. P. M. Gilner, et al. (September 20): Still abundant in the fields in Tift, Berrien, Worth, Dougherty, Lee, Terrill, and Stewart Counties, where second growth and a fair number of squares furnish sufficient food. Very little oviposition has occurred for 2 weeks, and some blooms distorted by feeding damage are now appearing in most fields.

Florida. C. S. Rude (September 27): Abundant in all fields. Owing to lack of food in northern and western Florida, the population is on the decrease.

Alabama. J. M. Robinson (September 19): Serious pest over the State this year.

Mississippi. E. W. Dunnam, et al. (September 20): Many of the weevils in Washington County went into hibernation during the week ended September 20. Examination of bark on trees showed hundreds in cracks and rough places. Those emerging from bolls have absolutely nothing on which to feed. (September 27): Cotton plants have taken on second growth

during the week and much tender foliage is available for food.

Louisiana. M. T. Young, et al. (September 20): In Madison Parish, during the week ended September 20, 102 weevils were collected on field flit screens in that parish, as compared with 21 in 1940 and 115 in 1939. Very little food available.

Tennessee. G. M. Bentley (September 19): Very few weevils found in cotton blooms in the extreme western section of the State.

Texas. H. E. Ewing, et al. (September 27): While general infestation throughout McLennan, Falls, and Limestone Counties has been reduced because leaf worms have stripped such a large proportion of the cotton, there are still many scattered fields where the leaves remain on the plants and squares are being produced, providing ample food and breeding grounds for the boll weevil.

W. C. Maxwell (September 22): Infestation continues to be general and heavy throughout the Coastal Bend section of the State. Practically all squares and young bolls badly infested. Reported as the most severe infestation in several years.

BOLLWORM (Heliothis armigera Hbn.)

North Carolina. J. O. Rowell (September 22): Serious damage was being done to late bolls in cottonfields visited on September 16 in Union County.

South Carolina. F. F. Bondy and C. F. Rainwater (September 6): Few in number in Florence County and doing no damage during the last week.

Georgia. P. M. Gilmer, et al. (August 30): Very severe damage continues in Tift and Berrien Counties. (September 6): Damage is much lighter owing to maturing of larvae and pupation.

Florida. J. R. Watson (September 10): Sea-island cotton in the center of the State was badly attacked during the latter part of August and first part of September. Bollworm has largely pupated.

C. S. Rude (September 20): New generation is appearing in many fields. (September 27): Present in most fields but doing little or no damage because of lateness of the season.

Alabama. J. M. Robinson (September 19): A serious pest over the State this season.

Mississippi. C. Lyle, et al. (September 25): Injured cotton bolls received from Bolivar, Lee, Leflore, Marshall, Monroe, Newton, Pontotoc, and Yazoo Counties. Reported as injuring cotton in Jackson and Meridian districts.

E. W. Dunnan, et al. (September 13): Caused more damage in Washington County this season than in recent years.

- Tennessee. G. M. Bentley (September 19): Injury more prevalent generally over the cotton-growing counties of western Tennessee than has been noticed in the last 5 years.
- Louisiana. I. J. Decnel (September 25): Appeared in abundance on a number of farms in northwestern Louisiana, causing serious damage to large bolls.
- Texas. L. W. Noble (September 27): Eggs and early larval stages were noted in late-planted cotton at Presidio during the week, but damage was light.
- Arizona. W. A. Stevenson (September 6): Bollworms in the Marana section are practically in pupation and the planters in Pima and Graham Counties are making every effort to produce a good top crop to partially offset the damage done to the bottom crop.

COTTON LEAF WORM (Alabama argillacea Hbn.)

- Maine. A. E. Brower (September 18): A few moths were found at a light at Augusta.
- District of Columbia. R. W. Harned (September 30): Three moths observed at lights and on a screen door.
- Michigan. R. Hutson (September 29): Moth appeared at East Lansing on September 10 and was reported from Saint Joseph on September 19.
- Minnesota. A. G. Rugeles (October 2): Moths are very abundant around Saint Paul and Minneapolis and in this general area. We have had reports from as far west as Ortonville and as far north as Staples. We have had a number of reports of damage to overbearing strawberries. One grower lost 50 percent of his crop one week.
- North Carolina. B. B. Fulton (September 23): Defoliated a number of cottonfields at Swanquarter, Hyde County, but too late to injure the crop.
- J. O. Rowell (September 29): Specimens of larvae and pupae submitted from Perquimans County, with statement that considerable damage has been done to the upper leaves of the cotton.
- South Carolina. F. F. Bondy, et al. (September 27): Has practically disappeared from Florence County without causing any noticeable stripping of cotton. Even in fields where first infestation was noted, the population never built up to large numbers. First generation of larvae appeared to be the heaviest.
- W. C. Nettles and F. Sherman (September 24): Rather spotted, and local injury has recently been noticed at several places over much of the State.

F. Sherman (September 26): Considerable number of fresh-looking adults observed at windows at Clemson College on morning of September 27. At Pendleton, about 4 miles from Clemson, defoliation of cotton was observed on September 25.

Georgia. T. L. Bissell (September 25): Stripping cotton at Cartersville in northwestern Georgia. In a few treated fields of later cotton the worms are now decreasing.

Florida. C. S. Rude (September 13): Still a serious threat to late cotton in Lake County.

J. R. Watson (September 10): Sea-island cotton in the center of the State was badly attacked during the latter part of August and first part of September. Most pupation has now taken place.

Alabama. J. M. Robinson (September 19): Reported as causing damage to cotton at Auburn, Athens, Dothan, and Scottsboro on August 12.

Mississippi. E. W. Dunnam, et al. (September 6): In Washington County leaf worms had stripped practically all leaves from all cotton that was not extremely tough. (September 20): Moths are abundant. Eggs deposited for the last 10 days have not hatched and most of them are to be drying out.

C. Lyle, et al. (September 24): Cotton in the northern two-thirds of the State has been almost completely defoliated. Degree of defoliation much greater than usual.

Tennessee. G. M. Bentley (September 10): Most of the cotton-growing counties in western Tennessee are highly infested. In untreated areas many acreages had complete devastation of leaves. Very little cotton in the central part of the State has been attacked. First appearance of damage was in the first week in August in Dyer, McNairy, and Tipton Counties.

Louisiana. M. T. Young (September 20): In Madison Parish there are very few cottonfields that have not been either defoliated or badly ragged and leaf worms can be found on most cotton that has not been defoliated.

I. J. Beemel (September 25): Practically every untreated cotton field in the Red River Valley has been defoliated.

Missouri. G. D. Jones (September 6): Specimens collected from cotton in Pemiscot and Dunklin Counties on September 3. First specimens for the year from this State. (Det. by C. Heinrich.)

L. Haseman (September 26): Northern flight of moths into central Missouri was extremely heavy from around September 10 to 20, but nearly all of them disappeared suddenly from orchards, where they were damaging late fruit, between September 20 and 25.

G. D. Jones (September 26): Widespread infestations have been occurring in southeastern Missouri since the middle of August. Only a few fields are severely damaged, as larvae showed up too late to reduce setting of bolls materially.

Texas. K. P. Ewing, et al. (September 6): Defoliation continues throughout central Texas. Damage will be considerable, as many of the bolls are only about half grown or smaller. This is especially true of late-planted cotton. Defoliation was noted all along the route from Port Lavaca to the coastal area, where treatment was preventing defoliation to a great extent. (September 13): Moths are exceedingly abundant in many fields in McLennan, Falls, and Limestone Counties, where the leaves remain on the cotton. Eggs are also numerous in many of these fields. It is estimated that there are hundreds of thousands of moths per acre in some fields.

W. C. Maxwell (September 22): Light infestation in many fields in Kleberg and Nueces Counties, but insufficient in numbers to cause defoliation.

L. W. Noble (September 20): Leaf worms are not causing serious damage in Presidio County. Only one field was noted in which the cotton crop had been appreciably damaged.

New Mexico. J. R. Eyer (September 3): Larvae collected from cotton at Deming on August 22. (Det. by C. Heinrich.)

Arizona. W. A. Stevenson (September 6): Specimens received during the week from Graham County, but no commercial damage has been reported. Infestation in Pima County is still very light. (September 13): Reported as present in Safford Valley.

COTTON LEAF PERFORATOR (Bucculatrix thurberiella Busck)

Texas. W. C. Maxwell (September 22): Height of infestation in Nueces County was attained about August 30, most of the leaves in nearly all of the cottonfields being infested. As many as 50 larvae were counted on some of the leaves. A few larvae are now present on some of the more succulent leaves, mines also being noticeable on such leaves.

PINK BOLLWORM (Pectinophora gossypiella Saund.)

Texas. L. W. Noble (September 6): Marked increase in population in Presidio County during 15-day period between infestation counts. (September 27): Heavy infestation prevailing at Presidio is causing shedding of young fruiting forms.

APHIDS (Aphididae)

South Carolina. F. F. Bondy and C. F. Rainwater (September 6): Aphids have about disappeared from cotton in Florence County.

Georgia. P. M. Gilmer, et al. (September 13): Very few aphids present in cotton in Tift and Berrien Counties.

Florida. C. S. Rude (September 27): Less numerous than a week ago.

Mississippi. E. W. Dunnan, et al. (September 27): Aphids have almost disappeared in all cottonfields in Washington County.

Louisiana. R. C. Gaines, et al. (September 13): Aphids have almost disappeared in most fields in Madison Parish.

I. J. Beemel (September 24): Aphids on cotton have practically disappeared. Predaceous insects have taken a heavy toll.

Texas. K. P. Ewing, et al. (September 13): Aphids have disappeared from many fields in McLennan, Falls, and Limestone Counties. (September 20): Scarce, except in an occasional field.

W. C. Maxwell (September 22): Light infestation of Aphis gossypii Glov. in some fields in Nueces County, but insufficient numbers to cause appreciable damage.

A PENTATOMID (Chlorochroa ligata Say)

Texas. L. W. Noble (September 27): Adults still present in cottonfields at Presidio. Reduction in yield is apparent.

WHITEFLIES (Aleyrodidae)

South Carolina. F. F. Bondy, et al. (August 30): Present in all fields and have probably added to the general aphid injury in Florence and Calhoun Counties.

F O R E S T A N D S H A D E - T R E E I N S E C T S

FALL WEBWORM (Hyphantria cunea Drury)

Connecticut. M. P. Zappe (September): Appears to be more abundant on shade trees in the eastern part of the State than it has been for 2 or 3 years.

Virginia. O. I. Snapp (August 16): Very heavy infestation observed on woodland trees, especially persimmon, near Rockymount, in the southern part of the State.

A. M. Woodside (September 23): Fairly common on persimmon and sourwood from Charlottesville to Danville and east to Richmond. All larvae had left nests by September 10.

West Virginia. O. I. Snapp (August 31): Nests were abundant on walnut trees in the mountains near Yellow Springs, in the eastern part of the State.

- North Carolina. O. I. Snapp (September 3): Abundant on persimmon and wild cherry in the vicinity of Walnut Cove, in northwestern North Carolina. Heavy infestation in that locality was reported a year ago.
- Florida. A. M. Phillips (September 15): Light to heavy infestation on pecans in some sections of Jefferson County.
- Mississippi. C. Lyle, et al. (September 25): Specimens taken from Arizona cypress were received from Washington County. Reported as present on pecan in Alcorn, Bolivar, Holmes, and Tippah Counties. Infestation is much lighter than in 1940.
- Arkansas. W. J. Baerg (September 2): Second-brood caterpillars are now in the second and third instars on walnut, persimmon, and birch. Second brood is about as numerous as the first.
- Wisconsin. E. L. Chambers (September): Moderately abundant in southern half of the State.
- Minnesota. A. C. Hodson (September 12): Common in ash and elm in many parts of the State. Complete defoliation of all trees and shrubs was observed on an island in Lake Kabetogama on August 18.

YELLOW-NECKED CATERPILLAR (Datana ministra Drury)

- Mississippi. C. Lyle, et al. (September 25): On September 1 larvae, supposed to belong to this species, were received from Washington County, where they were taken from oak trees. Observed injuring oak trees in Oktibbeha County at the same time.
- Minnesota. A. C. Hodson (September 12): Common on mountain ash, birch, and maple near Finland.

WHITE-MARKED TUSsock Moth (Hemerocampa leucostigma A. & S.)

- Indiana. J. J. Davis (September 23): Conspicuous in several localities. Especially abundant on Mahonia aquifolium at Bloomington on September 1.

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

- Virginia. O. I. Snapp (August 31): Very heavy infestation observed on ornamental cedar trees in yards at Winchester, in northern Virginia. Some trees completely defoliated.
- West Virginia. F. Waldo Craig (August 25): Reported as scarce throughout the State during the month.
- Mississippi. C. Lyle, et al. (September 25): Reported as injuring shrubs in Newton County and arborvitae in every town in the northeastern part of the State. Defoliated conifers observed in Tallahatchie County on September 19.

Tennessee. G. M. Bentley (September 16): Medium infestation on narrow-leaved evergreens generally over the State.

Ohio. E. W. Mendenhall (September 10): Serious on arborvitae trees in a nursery at Ashville.

Indiana. J. J. Davis (September 23): Abundant on a variety of trees in southern Indiana during August.

PALMERWORM (Dichomeris ligulella Hbn.)

Minnesota. A. C. Hodson (September 12): Very abundant in northeastern half of the State in June. Oak and hazel were heavily skeletonized. Many trees and shrubs were attacked in some localities and apples were attacked near Saint Paul.

WALKINGSTICK (Diapheromera femorata Say)

Minnesota. A. C. Hodson (September 12): Caused complete defoliation of about 40 acres in an area of mixed hardwoods west of Brainard. Found abundant in a much larger area where local defoliation was observed.

ASH

AN APHID (Prociphilus fraxinifolii Riley)

Utah. G. F. Knowlton (September 4): Seriously curled 10 percent of the green ash in a nursery plot at Logan. Almost 100-percent internal parasitization of insects late in the season.

BEECH

BEECH BLIGHT APHID (Prociphilus imbricator Fitch)

Connecticut. E. P. Felt (September 24): Extremely abundant on some woodlaid beeches at Greenwich.

BIRCH

BRONZED BIRCH BORER (Agrilus anxius Gory)

Maine. H. B. Peirson (September 22): Survey of yellow birch stands in central Maine shows that in many areas over 30 percent of the birch is dead or dying. Heavy infestation by this species occurs.

BIRCH SKELETONIZER (Bucculatrix canadensisella Chamb.)

Minnesota. A. C. Hodson (September 12): Very abundant in the area a few miles south of International Falls.

BIRCH LEAF-MINING SAWFLY (Phyllotoma nemorata Fall.)

Maine. H. B. Peirson (August 20): From 40 to 60 percent of the white birch leaves in an area in Somerset County are infested with an average of two insects per leaf.

A SAWFLY (Arge pectoralis Leach)

Minnesota. A. C. Hodson (September 12): Reported as completely defoliating paper birch north of Virginia and on Lake Vermilion. Little serious damage expected, because defoliation took place after August 1.

CATALPA

CATALPA SPHINX (Coratomia catalpae Bdv.)

Indiana. J. J. Davis (September 23): Defoliated catalpa trees in many localities of the State.

Mississippi. L. J. Goodgame (September 24): Larvae have defoliated all catalpa trees in one town in Monroe County.

ELM

ELM LEAF BEETLE (Galerucella xanthomelaena Schr.)

Ohio. E. W. Mendenhall (September 10): Second-brood beetles injuring Chinese elms in Ashville, Pickaway County.

LARGER ELM LEAF BEETLE (Monocosta coryli Say)

Alabama. J. M. Robinson (September 19): Reported as attacking elms at Blountsville and Troy on August 8.

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes Eich.)

Rhode Island. B. Eddy (September 23): Prevalent in hurricane-damaged and otherwise weakened elm trees throughout Rhode Island.

ELM LACEBUG (Corythucha pallida ulmi O. & D.)

Connecticut. E. P. Felt (September 24): Somewhat general along road from New Milford north to Canaan early in August.

EUROPEAN ELM SCALE (Gossyparia spuria Mod.)

Wisconsin. E. L. Chambers (September 24): Reported from several new locations. Increasing where no treatment has been applied and in poorly treated areas.

FIR

HEMLOCK LOOPER (Ellopia fiscellaria Guen.)

Minnesota. A. C. Hodson (September 12): Reported as common in balsam fir but no defoliation found.

HICKORY

OBSCURE SCALE (Chrysomphalus obscurus Const.)

Illinois. C. L. Metcalf (September 22): Injuring hickory trees at Paris, in east-central Illinois, early in September.

LARCH

EASTERN LARCH BEETLE (Dendroctonus simplex Lec.)

Minnesota. A. C. Hodson (September 12): Found killing mature tamarack near Deer River and Big Falls. Trees had healthy crowns but were not young and vigorous.

LINDEN

A CHRYSOMELID (Baliosus ruber Weber)

Minnesota. A. C. Hodson (September): Outbreak, which has continued with only slight interruption for 6 years, was evident again near Detroit Lakes. In some areas adults were so abundant in June that basswood trees turned brown, even though few larval mines were found on August 1.

LOCUST

LOCUST LEAF MINER (Chalepus dorsalis Thunb.)

Connecticut. J. V. Schaffner, Jr. (September 24): Foliage of black locust is browned throughout the northern part of Middlesex County.

Mississippi. L. J. Goodgame (September 25): Leaves of black locust trees in the northeastern part of Lee and in Union Counties have been injured.

LOCUST BORER (Cyrtene robiniae Forst.)

Rhode Island. B. Eddy (September): Normally abundant on goldenrod throughout the eastern part of the State.

Virginia. L. A. Metrick (September 25): Adults were abundant on the trunk of black locust trees at West Point.

MAPLE

ORIENTAL MOTH (Cnidocampa flavescens Walk.)

Massachusetts. J. V. Schaffner, Jr. (September 16): Continues to be locally abundant in some of the municipalities adjacent to Boston. Considerable number of shade and ornamental trees, principally Norway maple, in back yards and vacant lots in some residential sections of Cambridge and Medford were completely defoliated.

OAK

RED-HUMPED OAK CATERPILLAR (Synnerista albifrons A. & S.)

New Jersey. C. L. Griswold (September 5): S. albifrons albicosta Hbn. is very abundant on oaks through central and northern parts of Sussex County, especially in the Stokes State forest area. Bulk of the larvae were about half grown, but all instars were seen. Considerable defoliation in evidence.

Minnesota. A. C. Hodson (September 12): Reported as common during August on maple, oak, and various shrubs. Abundant on red maple near Lake Vernilion. Most defoliation not completed until after August 15.

A SCALE (Locanium quercitronis Fitch)

Alabama. J. M. Robinson (September 19): Reported on August 7 as being present on oak at Tarrant.

LEAFY OAK GALL (Andricus foliatus Ashm.)

Virginia. E. P. Felt (September 24): Observed in considerable numbers on a live oak at Virginia Beach.

PINE

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana Schiff.)

Rhode Island. B. Eddy (September 23): Austrian pine in Narragansett had tips of laterals heavily infested and the sap ran down the stems for some distance.

Michigan. R. Hutson (September 29): Reported from Detroit.

NANTUCKET PINE SHOOT MOTH (Rhyacionia frustrana Const.)

West Virginia. F. Waldo Craig (August 25): Specimens of borers in twigs from the scrub pine were collected at Lesage, in Cabell County.
(Det. by C. Heinrich as possibly this species.)

Mississippi. C. Lyle, et al. (September 25): Specimens were received from Hinds, Newton, and Washington Counties late in August and in September. Observed on pine in one locality in Oktibbeha County.

Michigan. H. J. MacAloney (August 30): Larvae were collected from red-pine-seedling stock in a nursery at Wellston. Very scarce. (Det. by C. Heinrich as presumably R. frustrana.)

ZIMMERMAN'S PINE TIP MOTH (Pinipestis zimmermanni Grote)

Minnesota. A. C. Hodson (September 12): Found causing severe damage to red pine west of Park Rapids. On some trees nearly all current terminal growth was killed.

SPRUCE BUDWORM (Cacoecia funiferana Clem.)

Minnesota. A. C. Hodson (September 12): Reported as causing heavy defoliation of jack pine in Superior National Forest and near Brainard. Spruce variety caused heavy defoliation in small stand of Balsam fir west of Duluth.

A SAWFLY (Gilpinia frutetorum F.)

Rhode Island. J. V. Schaffner, Jr. (September 24): Light infestations found in red pine plantation at East Greenwich, and in a Scotch and Austrian pine plantation at Portsmouth.

Connecticut. J. V. Schaffner, Jr. (September 19): Larvae, from two-thirds grown to full grown, are rather abundant on red pine at Southington. Light infestations found in plantations at Middletown, North Haven, Branford, and Litchfield.

A SAWFLY (Neodiprion pinetum Nort.)

Illinois. C. L. Metcalf (September 22): Severely defoliated large white pine trees in De Kalb County, northern Illinois, late in August, and early in September.

RED-HEADED PINE SAWFLY (Neodiprion lecontei Fitch)

Minnesota. A. C. Hodson (September 12): Common on young red pine near Cloquet. Some trees were completely defoliated on August 22. Larvae are now nearly full grown.

INTRODUCED PINE SAWFLY (Diprion simile Htg.)

Minnesota. M. W. Wing (September 15): Present on pine at White Deer.

A PINE WEEVIL (Pissodes approximatus Hopk.)

Massachusetts. E. P. Felt (September 24): Injurious to mugho pine at Waban.

PINE NEEDLE SCALE (Chionaspis pinifoliae Fitch)

Connecticut. M. P. Zappe (September): Increasing in abundance over the entire State for several years. Rather scarce a few years ago, but is a serious pest of mugho, red, Scotch, and Japanese red pines. Many large red pines (30 feet) are completely white and very noticeable.

Wisconsin. E. L. Chambers (September 24): Observed in Jefferson County during the month.

POPLAR

A BORER (Euzophera ostricolorella Hult)

New York. E. P. Felt (September 24): Injuring bases of a number of tulip trees about 10 inches in diameter at Westbury, Long Island.

POPLAR AND WILLOW BORER (Sternochetus lapathi L.)

Wisconsin. E. L. Chambers (September 24): This insect is moderately abundant in the southeastern corner of the State.

SPRUCE

YELLOW-HEADED SPRUCE SAWFLY (Pikonema alaskensis Rohw.)

Minnesota. A. C. Hodson (September 12): Found scattered through coniferous area with heavy defoliation of white spruce north of Hovland.

SPRUCE NEEDLE MINER (Epinotia nanana Treit.)

Wisconsin. E. L. Chambers (September 24): On the increase throughout southern Wisconsin, doing damage in some localities.

SPRUCE BUD SCALE (Physokermes piceae Schr.)

Wisconsin. E. L. Chambers (September): Observed in many locations in southern part of the State.

SYCAMORE

SYCAMORE LACEBUG (Corythucha ciliata Say)

Connecticut. A. DeCaprio (September 24): Leaves of sycamore trees in the vicinity of New Haven have shown decided yellowing.

INSECTS AFFECTING GREENHOUSE
AND ORNAMENTAL PLANTS

FULLER'S ROSE BEETLE (Pantomorus godmani Crotch)

Virginia. L. A. Hetrick (September 28): Abundant and feeding on foliage of mimosa and black locust at West Point.

CHINCH BUGS (Blissus spp.)

Connecticut. J. P. Johnson (September 25): Last nymphal instar and overwintered adults of the second generation of B. hirtus Montd. are present in large numbers in infested turf in New Haven and New Britain. Dry weather during August and September created favorable conditions for the second-generation bugs.

Rhode Island. B. Eddy (September 23): B. hirtus has continued to be present in lawns in Providence during September.

Alabama. J. M. Robinson (September 19): B. insularis Say reported as causing damage to Saint Augustine grass at Hartford on July 22.

TWO-MARKED TREE HOPPER (Enchenopa binotata Say)

Connecticut. E. P. Felt (September 25): Bladder nut (Ptelea trifoliata) has a large proportion of the under sides of the smaller branches $\frac{1}{4}$ inch in diameter, or thereabouts, nearly covered with the peculiar waxy material indicating oviposition scars made by this insect. No visible injury at present, but it is possible that the twigs have been injured to such an extent that many of them will die during the coming winter.

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Mississippi. C. Lyle, et al. (September 25): Reported as causing injury to privet hedge plants in Hinds County and to Cape-jasmine in the Meridian area.

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

Minnesota. M. W. Wing (September 15): Scarce on lilac in Minneapolis.

Wisconsin. E. L. Chambers (September): Observed in Racine County, and abundant in one location.

Utah. G. F. Knowlton (September 19): Attacking lilac, poplar, willow, and ash at Logan.

WHITE PEACH SCALE (Aulacaspis pentagona Targ.)

Virginia. L. A. Hetrick (September 28): Heavy infestation noted on catalpa trees at Sandston.

CYCLAMEN MITE (Tarsonemus pallidus Banks)

Illinois. W. P. Flint (September 24): More prevalent on greenhouse crops such as cyclamen, Saintpaulia sp., and ivies than at any time during the last 3 years. Very severe infestation has been found on azalea in a central Illinois greenhouse.

COMMON RED SPIDER (Tetranychus telarius L.)

Wisconsin. E. L. Chambers (September 24): Very abundant throughout the State on evergreens and various flower plants.

AZALEA

AZALEA LACEBUG (Stephanitis pyrioides Scott)

Mississippi. G. L. Bond (September 25): Some damage to azalea observed in Jackson County.

CANNA

LARGER CANNA LEAF ROLLER (Calpodex ethlius Cram.)

Arizona. R. A. Flock (September 20): Present on canna from Tombstone to Pomerene, Cochise County.

CHRYSANTHEMUM AND DAHLIA

COCKLEBUR BILLEBUG (Rhodobaenus tredecimpunctata Ill.)

Georgia. T. L. Bissell (September 19): Reported by a grower as doing considerable damage to dahlias at Barnesville.

Indiana. J. J. Davis (September 23): Reared from a larva infesting terminal shoots of greenhouse chrysanthemum. Larva was received September 1 and emerged as an adult on September 15. First infestation observed on August 20.

Wisconsin. E. L. Chambers (September 24): Some dahlia growers in Dane and Milwaukee Counties reported serious injury to dahlia plants during the latter part of August and the early part of September.

GRAPEMYRTLE

GRAPEMYRTLE APHID (Myzocallis kahawaluokalani Kirk.)

Mississippi. L. J. Goodgame (September 25): Observed in one locality in Monroe County.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

Maryland. E. N. Cory (September 12): Reported from Prince Frederick.

Virginia. L. A. Metrick (September 28): Ornamental euonymus plants are heavily infested generally in most parts of eastern Virginia.

South Carolina. F. Sherman (September 20): Heavy infestations are in evidence at Clemson.

Mississippi. C. Lyle, et al. (September 25): Caused serious damage in the Meridian area and in Madison and Oktibbeha Counties.

GLADIOLUS

GLADIOLUS THRIPS (Taeniothrips simplex Morison)

South Carolina. F. Sherman (September 24): Reported from several places in the western half of the State.

Tennessee. G. M. Bentley (September 23): Caused less injury on gladiolus than for several years.

Wisconsin. E. L. Chambers (September 24): Very abundant and doing much damage in the southern two-thirds of the State.

HAWTHORN

PEAR SLUG (Caliroa cerasi L.)

Utah. G. F. Knowlton (September 19): Damaged ornamental hawthorn foliage on college campus at Logan.

WOOLLY APPLE APHID (Eriosoma lanigerum Hausn.)

Wisconsin. E. L. Chambers (September 24): Observed to be very abundant on flowering crabs in Walworth County during the month.

AN APHID (Amphorophora crataegi Tissot)

Utah. G. F. Knowlton (September): Seriously injured hawthorn bushes on the margin of a nursery at Logan. Thirty percent of the leaves on one bush have fallen and the under sides of leaves and many of the stems are covered by the yellow-bodied aphids.

IVY

OLEANDER SCALE (Aspidiotus hederac Vallot)

Nebraska. H. D. Tate (September 18): On ivy leaves from Lancaster County on August 27.

LILAC

LILAC BORER (Podosesia syringae Harr.)

Kansas. H. R. Bryson (September 22): Reported as causing injury to lilacs at Hillsboro.

PALM

PALM WEEVIL (Rhynchophorus cruentatus F.)

Florida. J. R. Watson (September 22): Reported as a serious pest of palms on the lower East Coast.

PRIVET

PRIVET THRIPS (Dendrothrips ornatus Jablon.)

Maryland. W. M. Davidson (September 10): Heavy infestation caused extensive silvering on privet hedge at Beltsville residence center during July and August.

PYRACANTHA

A LACEBUG (Corythucha cydoniae Fitch)

Georgia. T. L. Bissell (September 10): Unusually thick on pyracantha for several weeks.

LEAF CRUTLER (Mineola indigenella Zell.)

Texas. R. K. Fletcher (September 25): Causing an increasing amount of damage to pyracantha in Harris County and throughout eastern Texas.

ROSE

ROSE STEM GIRDLER (Agilus communis rubicola Per.)

Wisconsin. E. L. Chambers (September): Observed killing rose in Milwaukee County.

ROSE SCALE (Aulacaspis rosae Douche)

Wisconsin. E. L. Chambers (September 24): Observed doing severe damage to roses in Milwaukee County during the month.

ROSE LEAFHOPPER (Typhlocyba rosae L.)

Wisconsin. E. L. Chambers (September 24): Very abundant in southern half of State.

ZINNIA

YELLOW WOOLLY BEAR (Diacrisia virginica F.)

Texas. W. C. Maxwell (September 22): Severely damaged foliage of zinnias at Robstown, practically all of the feeding being done on the under side of the leaf. Damage was general over a period of several weeks. Zinnias apparently the preferred host.

I N S E C T S A T T A C K I N G M A N A N D

D O M E S T I C A N I M A L S

MAN

MOSQUITOES (Culicinae)

Florida. W. E. Dove (September): Aedes taeniorhynchus Wied. has been unusually abundant during the summer months but decreased during September. A. sollicitans Walk. has been present in the vicinity of Panama City and was found breeding in large numbers in a small pond about 50 miles from salt water.

G. H. Bradley (August 31): Salt-marsh-mosquito infestation at New Smyrna Beach decreased considerably from the previous month. Light trap at laboratory took an average of 21 A. sollicitans and A. taeniorhynchus per night, as compared with an average of 77 last month and 97 for August 1940.

J. B. Hull (August 31): Salt-marsh mosquitoes were less numerous on the island across from Fort Pierce during August than during July.

Missouri. L. Haseman (September 26): Mosquitoes have been extremely annoying through central Missouri, and it has been reported that they have been equally as abundant through northeastern Missouri and in other sections of the State. Two undetermined species have been most common in the collections.

Kansas. H. R. Bryson (September 20): Culex spp. are more abundant in the vicinity of Manhattan than they were at this time last year.

Texas. W. G. Bruce (September 16): A. triseriatus Say was collected on September 8 at Dallas. (Det. by A. Stone.)

Colorado. M. T. James (September 20): Breeding has evidently been more active than usual in the vicinity of Denver, Fort Collins, Greeley, and Boulder. Reports of mosquitoes have been received from Denver,

and stock ranchmen in southeastern Weld County report that the infestation has continued longer than usual in the season. Preliminary surveys show that chief species seem to be A. dorsalis Meig., A. nigromaculis Ludl., A. vexans Meig., Culex tarsalis Coq., and Theobaldia inornata Will. One hundred and sixty-four cases of encephalomyelitis in man and 39 deaths have been reported for the State up to the early part of September.

Utah. G. F. Knowlton (August 30): Mosquitoes, mostly A. dorsalis, are extremely annoying to man and livestock in fields near Logan, Hooper, Plain City, Snowville, Bothwell, Penrose, Garland, Tremonton, Locomotive Springs, and east of Kosmo.

Oregon. E. F. Knipling (September 3): A total of 254 Anopheles sp. were obtained in 1 night's catch in a light trap in Portland, which is by far the greatest number of this genus recorded from 1 night's catch in the Northwest. Monsonia perturbans Walk. were taken in a light trap on Lotus Island (Portland) during August. Population at Scappoose seemed to be lower during the middle of August than during the latter part of July, when the first Oregon records were made.

FLEAS (Siphonaptera)

Maryland. E. N. Cory (September 11): Common dog flea reported from Cumberland.

Florida. F. C. Dishopp (September 26): Fleas reported as causing severe annoyance in barns on a farm near Caryville during the summer and an inspection was made today without seeing a flea. Reported as usually disappearing at this time of the year.

Indiana. J. J. Davis (September 23): Fleas have been very abundant in buildings, lawns, and farm buildings, especially hog barns, in all sections of the State during the last 2 months.

Michigan. R. Hutson (September 29): Considerable trouble has been experienced from dog and cat fleas in the vicinity of Lansing and Buchanan.

Missouri. L. Haseman (September 26): Fleas reported in barns, outbuildings, and basements.

Kansas. H. R. Bryson (September 24): Unusual number of reports of infestations of dog fleas have been received during the month. Special reports have been received from Manhattan, McPherson, and Humboldt.

BEDBUG (Cimex lectularius L.)

Maryland. E. N. Cory (September 5): Reported from Cumberland.

Alabama. J. M. Robinson (September 19): Reported as attacking chickens at Atmore on August 20.

BLOODSUCKING CONENOSE (Triatoma sanguisuga Lec.)

Indiana. J. J. Davis (September 23): Reported as very annoying during August in three localities in the southern third of the State.

CHIGGER (Eutrombicula alfreddugesi Oud.)

Missouri. L. Haseman (September 26): Caused annoyance during first half of September and were reported as late as September 20, a little later than usual for central Missouri.

EYE GNATS (Hippelates spp.)

Texas. F. C. Bishopp (September 10): Abundant and very annoying in various locations in Dallas.

BROWN DOG TICK (Rhipicephalus sanguinus Latr.)

Maryland. E. N. Cory (September): Reported from Stockton on September 3, from Salisbury on September 4, and from Baltimore on September 15.

AMERICAN DOG TICK (Dermacentor variabilis Say)

Massachusetts. C. N. Smith (September 26): Activity of adults continued to decline during August and completely ceased in some areas. Abundance of nymphs and larvae increased in some areas.

Maryland. E. B. Marshall (August 27): Three adults were taken from a dog at Laurel. (Det. by H. L. Trembley.)

BLACK WIDOW SPIDER (Latrodectus mactans F.)

Indiana. J. J. Davis (September 23): Reported during the last 2 months as more abundant than usual in the southern half of the State.

Nebraska. H. D. Tate (September 18): Reported as present in Red Willow, Clay, York, Scotts Bluff, and Platte Counties from August 14 to September 15.

CATTLE

SCREWORM (Cochliomyia americana C. & P.)

Florida. M. H. Wodlinger (September 11): High incidence occurred in a number of hogs on a farm at Ocala, 20 out of 200 being infested.

Florida and Alabama. W. E. Dove, S. W. Simons, F. C. Bishopp (September 14): No cases reported from the immediate vicinity of Bonifay, Fla., this season. Farmers state that recently they have seen infestations which they think were true screwworm cases near Marianna, Fla., and Geneva, Ala.

Indiana. J. J. Davis (September 23): Infested the navel of a recently born calf on August 26 at La Fayette. Reported on September 18 as causing considerable trouble at North Salem. (Det. by H. G. Hall.)

Montana. H. B. Mills (September): Primary screwworm reported as attacking cattle near Custer. (Det. by E. F. Knipling.)

California. F. C. Bishopp (August): Five larvae were submitted from necks of bears at Balboa Park, San Diego. This is an interesting host record. (Det. by E. F. Knipling.)

STABLEFLY (Stomoxys calcitrans L.)

Massachusetts. C. N. Smith (September 22): Annoying to persons on beaches and in the town of Martha's Vineyard near beaches.

Georgia. W. E. Dove (September 22): Coincidental with harvesting of peanuts in the vicinity of Valdosta, dogflies are now increasing in numbers to localized outbreaks.

Florida. W. E. Dove (September): By the latter part of August flies ranged from 350 to 500 per animal in the vicinity of Fort Walton, and from 20 to 25 per animal in the vicinity of Panama City, in northwestern Florida. On September 20, flies were scarce throughout the control area but were found breeding at either end of the control area in untreated material. In one of these locations animals averaged about 175 each and at the other place a lighthouse keeper experienced an outbreak.

Utah. G. F. Knowlton (August 30): Abundant at Snowville.

HORN FLY (Haematobia irritans L.)

Florida. F. C. Bishopp (September 13-14): Relatively scarce in western Florida. From 10 to 50 flies per head at present. One animal had 150 to 200 flies. Reported as much more numerous earlier.

COMMON CATTLE GRUB (Hypoderma lineatum DeVill.)

Texas. F. C. Bishopp and O. G. Babcock (September 5): No grubs were apparent in several dairy herds visited near San Angelo, Eldorado, Christoval, and Sonora.

GULF COAST TICK (Amblyomma maculatum Koch)

Florida. E. B. Blakeslee (September): Infestations are light but are commonly found at different places in northwestern Florida. Animals usually show from about one to five ticks each.

HORSEFLIES (Tabanidae)

Florida. F. C. Bishopp (September 14): A few tabanids were observed on livestock in the vicinity of Bonifay. Reported as much more abundant and annoying to livestock a few weeks ago.

W. D. Dove (September 23): Two species, Tabanus atratus F. and T. lineola F., have been common about range animals during the last month and when there was an entire absence of the predaceous wasp Stictia carolina F. T. atratus averaged two per animal and T. lineola increased to an average of about seven per animal.

Colorado. M. T. James (September 20): Horseflies were more troublesome than usual in the mountain parks west of Denver. In eastern Colorado the flies caused much less trouble, probably owing to the fact that the breeding grounds were flooded by unusually heavy rains.

Utah. G. F. Knowlton (September 1): T. punctifer O. S. is annoying at Yost.

POULTRY

FOWL TICK (Argas miniatus Koch)

Alabama. W. E. Dove (September 10): Has become established in Birmingham, where it has caused poultry to vacate houses. Some birds have died from the infestations.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

TERMITES (Isoptera)

Nebraska. H. D. Tate (September 18): Reticulitermes tibialis Banks was reported from Pawnee and Lancaster Counties.

Utah. G. F. Knowlton, et al. (September 18): Termites reported as damaging houses at Smithfield and Provo.

Nevada. G. G. Schwois (September 20): Injury has been reported from a number of residents in Reno and, in some instances, damage has been severe.

ANTS (Formicidae)

Florida. W. Mathis (September 13): Infestations of the little fire ant (Wasmannia auropunctata Roger) in citrus groves on the lower East Coast have built up to equal those existing before the freeze of January 1940.

J. R. Watson (September 22): Field of eggplant in Alachua County was nearly destroyed by ants eating the foliage and blossoms.

Mississippi. C. Lyle, et al. (September 25): Iridomyrmex humilis Mayr has been reported from the Grenada area and from Hinds, Monroe, and Prentiss Counties, while in Stone County a reinfestation of one town was reported after the ants had been eradicated more than 10 years. Specimens of Monomorium pharaonis L. were received from Harrison County on September 9. Specimens of Paratrechina longicornis Latr. were received from Harrison County on August 26 and September 17 and were reported as causing annoyance in homes. Also reported as numerous in stores and restaurants in one locality in Stone County. Specimens of Solenopsis xyloni McCook were received from Leflore County where they had invaded an office building. Also reported as troublesome in the Grenada area and the southeastern counties.

Louisiana. C. O. Eddy (September 25): The Argentine ant (I. humilis) has been reported as very annoying throughout Louisiana.

Nebraska. H. D. Tate (September 18): A specimen of Pharaoh's ant (M. pharaonis) from Lancaster County was submitted on August 17 with the report that it was very annoying in a house.

Utah. G. F. Knowlton (September 6): Ants causing annoyance in fruit rooms at Logan and Wellsville.

HOUSE CRICKET (Gryllus domesticus L.)

Wisconsin. E. L. Chambers (September): Abundant in several cities early in September, causing damage to draperies and furniture in stores.

SILVERFISH (Lepisma saccharina L.)

Georgia. T. L. Bissell (September 5): Reported as overrunning houses in Griffin.

Utah. G. F. Knowlton (September 6): Infesting a school building at Logan.

BOOKLOUSE (Liposcelis divinatorius Mull.)

Nebraska. H. D. Tate (September 18): Specimens were received from Cuming County on August 25; abundant in most of the rooms of a house.

GIANT HORNET (Vespa crabro germana Christ)

Pennsylvania. T. L. Guyton (September 16): A nuisance about a house in Bernville, Berks County.

Maryland. E. N. Cory (September 6): Reported from Annapolis.

GERMAN COCKROACH (Blattella germanica L.)

Rhode Island. B. Eddy (September 3): Usually rather rare, but found in one house in Providence.

Mississippi. C. Lyle (September 24): Reported as annoying in Adams, Hancock, Prentiss, and Tippah Counties.

Utah. G. F. Knowlton (September 17): Infesting a restaurant at Salt Lake City.

AUSTRALIAN COCKROACH (Periplaneta australasiae F.)

Arizona. R. A. Flock (September 10): Found in house at Benson, Cochise County. First record for the State.

BOXELDER BUG (Leptocoris trivittatus Say)

Pennsylvania. T. L. Guyton (September 16): Numerous at Camp Hill, Cumberland County.

New Jersey. E. P. Felt (September 24): Reported as swarming on trees and buildings on September 6 at Far Hills.

Maryland. E. N. Cory (September 12): Reported from Cumberland.

Virginia. G. J. Hacussler (September 2): Nymphs of various sizes and adults are feeding in great numbers on ash trees adjacent to a dwelling, and swarming into the house and causing considerable alarm and annoyance.

A. M. Woodside (September 23): Becoming a nuisance in dwellings at Staunton. Not so common as in previous years.

H. G. Walker and L. D. Anderson (September 24): Boxelder tree in Craddock was found to be heavily infested and several reports of abundance have been received from other parts of the Norfolk area..

Ohio. T. H. Parks (September 23): Very plentiful generally. Specimens submitted with the report that they are a nuisance in lawn and about house.

Indiana. J. J. Davis (September 23): Reported from all parts of the State.

Michigan. R. Hutson (September 29): Numerous at Sturgis, Breedsville, Ann Arbor, Kalamazoo, Portland, Grand Ledge, Detroit, Tecumseh, Hillsdale, Montrose, and Chesaning.

Wisconsin. E. L. Chambers (September): Very abundant in the southwestern part of the State. Also observed in large numbers at one location in Waukesha County.

Nebraska. H. D. Tate (September 18): Specimens received from Burt, Dodge, and Dixon Counties during the period from August 14 to September 15.

Utah. G. F. Knowlton (September 18): Again becoming annoying in houses in northern Utah, owing to cool weather, and foliage at Logan is infested.

PACIFIC DRAIN FLY (Psychoda pacifica Kincaid)

Utah. G. F. Knowlton (September 6): Adults have been emerging from wash-basin drain pipes in Logan and Salt Lake City.

BEAN WEEVIL (Acanthoscelides obtectus Say)

Missouri. L. Haseman (September 26): Reported by growers throughout the State. In central Missouri the insect has been quite abundant in beans that ripened in September.

DRUG STORE WEEVIL (Stegobium paniceum L.)

Rhode Island. B. Eddy (September 19): Found in corn meal stored in a warehouse.

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis L.)

Maryland. E. N. Cory (September 6): Reported from Baltimore.

Illinois. W. P. Flint (September 24): Has become very abundant in bins of shelled corn held on farms and in storage. Many bins shelled in 1939 and 1940 are heating from the presence of this beetle.

Nebraska. H. D. Tate (September 18): Specimens submitted from Johnson County on August 25 and from Pierce County on September 8. Reported from Keith, Saunders, Knox, and Brown Counties on August 28 and on September 6, 12, and 13, respectively.

Minnesota. M. W. Wing (September 15): Reported as present in a store at Park Rapids.

Wyoming. B. T. Snipes (July 28): Present in stored grain and causing light damage at Riverton, Fremont County.

LIBERATIONS OF EUROPEAN CORN BORER PARASITES

IN THE UNITED STATES IN 1941 ^{1/}

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During 1941 a total of 66,004 adults of 4 parasite species -- Chelonus annulipes Wesm., Inareolata punctoria Roman, Lydella grisescens R. D., and Macrocentrus gifuensis Ashm. -- were liberated against the European corn borer in the United States. All parasites liberated were reared from corn borer larvae collected in Massachusetts and Connecticut in localities where these exotic species are well established.

The corn borer parasite colonization program for 1941 stressed the distribution of the polyembryonic braconid Macrocentrus gifuensis in the Atlantic Coast States from New York to Virginia. Particular emphasis was placed on the colonization of this species on the Eastern Shore of Virginia. Thirteen colonies totaling over 25,000 adults of this parasite were released in Accomac and Northampton Counties, Va., in 1941. Releases of this species in these 2 counties were made at intervals of approximately 6 miles. For the remainder of the area covered, releases were on the basis of 1 colony, of approximately 2,000 adults of both sexes, per county.

Adults of M. gifuensis were released in 1 county in New York (on Long Island), 5 counties in New Jersey, 2 counties in Pennsylvania, 3 counties in Delaware, 3 counties in Maryland, and 3 counties in Virginia. Releases of this species totaled 59,505 adults in 1941.

Colonies of the larval parasite Inareolata punctoria were released in Burlington County, N. J., Somerset and Worcester Counties, Md., and Princess Anne County, Va. Releases of this species totaled 3,122 adults.

The tachinid Lydella grisescens was released in Sussex County, Del., and in Princess Anne County, Va. A total of 2,439 adults of this species was liberated in 1941.

^{1/}

For previous releases of European corn borer parasites in the United States see Insect Pest Survey Bul. Sup. to No. 9, v. 18 (1938), v. 19 (1939), and v. 20 (1940).

The egg-larval parasite Chelonus annulipes was released in Burlington County, N. J., and in Princess Anne County, Va. A total of 938 adults was liberated.

Table 1 lists corn borer parasite liberations by species for the various States and counties in which releases were made in 1941.

Most of the parasite releases were made on the first generation of the borer, except in the case of Chelonus annulipes in Princess Anne County, Va. and some releases of Inareolata punctoria and Macrocentrus gifuensis in Burlington County, N. J. These releases were made against the second generation of the host insect.

All releases were accomplished at a time to synchronize with the proper stage of development of the host larvae in the field, except for the release of C. annulipes in Princess Anne County, Va., which was made possibly a week too early; however, small numbers of host eggs were present in the field at the time of this release.

Table 1.--Summary of liberations of corn borer parasites in the United States in 1941

Species	State	County	Date of release	Adults released
				Number
<u>C. annulipes</u> -----	New Jersey	Burlington	June 2	327
Do-----	Virginia	Princess Anne	June 20	611
Subtotal-----	--	--	--	938
<u>I. punctoria</u> -----	Maryland	Somerset	May 31	591
Do-----	do.	Worcester	June 1	596
Do-----	New Jersey	Burlington	June 14-18	276
Do-----	do.	do.	Aug. 7-11	167
Do-----	Virginia	Princess Anne	June 1-9	1,492
Subtotal-----	--	--	--	3,122
<u>L. griseus</u> -----	Delaware	Sussex	June 14	197
Do-----	Virginia	Princess Anne	May 23-June 10	2,242
Subtotal-----	--	--	--	2,439
<u>M. gifuensis</u> -----	Delaware	Kent	June 14	1,981
Do-----	do.	New Castle	June 14	1,984
Do-----	do.	Sussex	June 14	1,979
Do-----	Maryland	Somerset	May 31	1,988
Do-----	do.	Wicomico	May 31	1,982
Do-----	do.	Worcester	June 1	1,979
Do-----	New Jersey	Burlington	June 21	2,512
Do-----	do.	Burlington	Aug. 7-15	2,120
Do-----	do.	Cape May	June 16	1,989
Do-----	do.	Cumberland	June 16	1,994
Do-----	do.	Essex	June 18	1,993
Do-----	do.	Salem	June 16	1,988
Do-----	New York	Nassau	June 18	1,982
Do-----	Pennsylvania	Bucks	June 16	1,992
Do-----	do.	Centre	June 19	1,988
Do-----	Virginia	Accomac	June 1-14	15,350
Do-----	do.	Northampton	May 28-June 1	9,930
Do-----	do.	Princess Anne	May 29-June 10	3,774
Subtotal-----	--	--	--	59,505
Total-----	--	--	--	66,004

The number of adults handled in shipments for release in 1941 was 67,355. Of this number only 1,351, or 2.0 percent, died during collection, packing, and shipment. The mortality in shipments of Macrocentrus gifuensis was less than usual for this very delicate species, probably because most of these parasites were taken to the point of release by automobile and promptly liberated. Mortality was high in only 1 shipment, this being a railway-express shipment of 4,000 M. gifuensis to Virginia. This consignment was

delayed 22 hours en route and the mortality in the lot was 12.3 percent. Table 2 shows handling and shipping mortality by species in 1941.

Table 2.--Mortality in shipments of corn borer parasites for field release, 1941

Species	: Adults : shipped	Mortality	
		Number	Percent
<u>Chelonus annulipes</u> -----	: 958	: 20	: 2.1
<u>Inareolata punctoria</u> -----	: 3,209	: 87	: 2.7
<u>Lydella grisescens</u> -----	: 2,458	: 19	: 0.8
<u>Macrocentrus gifuensis</u> -----	: 60,730	: 1,225	: 2.0
Total-----	: 67,355	: 1,351	: 2.0

During the period March 24-31, 1941, a total of 12,850 adults of the larval parasite M. gifuensis was shipped to the Dominion Parasite Laboratory at Belleville, Ontario, Canada, for experimental work at that laboratory. The mortality in these shipments was 2.5 percent.

SUMMARY

A total of 66,004 European corn borer parasites was released in the United States in 1941. Of this number 59,505 were adults of the polyembryonic braconid Macrocentrus gifuensis Ashm. Other parasites released in smaller numbers included Chelonus annulipes Wesm., Inareolata punctoria Roman, and Lydella grisescens R. D.

Parasite releases in 1941 were confined to the Atlantic Coast States from New York (Long Island) to Virginia, inclusive. Special emphasis was placed on parasite colonization on the Eastern Shore of Virginia and in Princess Anne County, Va., where the corn borer has been very abundant recently and has caused serious damage.

All parasites released were reared from borers collected in Massachusetts and Connecticut, where these exotic parasites are now well established.

Mortality of parasite adults handled for release in 1941 in the United States was 2.0 percent.

Over 12,000 adults of M. gifuensis were shipped to the Dominion Parasite Laboratory in Canada.

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THE MORE IMPORTANT RECORDS FOR OCTOBER

White grubs were reported as doing considerable damage in Indiana and Illinois.

Wireworms were reported as injuring potatoes in New England, onions in Minnesota, and wheat in Oklahoma.

Fall armyworms were abnormally abundant in New England and the Middle Atlantic States, with severe damage reported from Mississippi, Missouri, and Texas. They were also reported from Nebraska.

The European corn borer was reported from sections of Maryland and Virginia, which are in the vicinity of Washington, D. C. This appears to be the first record from this locality. It was also reported for the first time from eight new counties in southern Virginia. This insect was seriously prevalent in Ohio and parts of Indiana. In Illinois about half of the counties of the State are infested. It was also recorded for the first time from three additional counties in Wisconsin.

The chinch bug was migrating to hibernation quarters in Indiana, Illinois, and Missouri.

The southwestern corn borer caused considerable damage in southwestern Kansas and parts of Oklahoma.

The sorghum webworm was very destructive to foxtails and other grain sorghums in Oklahoma and parts of Texas, and was also reported from Indiana.

The velvetbean caterpillar was generally reported from the South Atlantic States and the Gulf region.

An increase in the populations of the San Jose scale was reported from the East Central States.

Weather conditions have been favorable for the development of Cornstock's mealybug and high populations of overwintering eggs in parts of Virginia and Ohio.

The green stinkbug has almost completely destroyed tomatoes, beans, and peas over the southern half of Alabama. Vetches, Austrian winter peas, and crimson clover very seriously damaged on about 200,000 acres in the Willamette Valley, Oreg. by garden slugs.

The potato tuber worm is very abundant and doing considerable damage to potatoes on the Eastern Shore of Virginia. It was also reported from parts of Louisiana.

The cabbage looper occurred in outbreak numbers in eastern Virginia and in damaging numbers in parts of Texas and Oklahoma.

The sweetpotato weevil was reported from Hutchinson County, Kans., this being the first record for that State.

Indications are that large populations of boll weevils will go into hibernation over most of the Cotton Belt.

The cotton leaf worm during the second week in the month appeared in Maryland and during the third week in the month throughout the East Central States and in Nebraska.

Pines have been severely infested by the European pine shoot moth in areas in Connecticut, New York, New Jersey, and Massachusetts.

The boxelder bug was unusually numerous throughout the Middle Atlantic East Central, and West Central States, being particularly troublesome because of entering houses.

The screwworm was reported as unusually abundant in parts of Indiana, Illinois, Mississippi, and Arizona, and first recorded in Montana.

THE MORE IMPORTANT INSECT RECORDS IN CANADA FOR AUGUST-SEPTEMBER

Grasshopper surveys in August revealed light to moderate infestations over the greater part of the agricultural area in Manitoba. In general, damage was very light, although some late crops in the Red River Valley and Carmen areas suffered severely. The clear-winged grasshopper was found to have extended its range into northern areas of the Province. In southern sections the lesser migratory and two-striped grasshoppers were predominant. In Saskatchewan, where the dominant species is the lesser migratory grasshopper, there was a high survival and marked increase of grasshoppers this season over much of the Province, but particularly in the west and west-central regions. Considerable damage to later grain crops occurred, and flax suffered heavily in some areas. In Alberta, the lesser migratory grasshopper, although greatly reduced as compared with 1940, was present in small numbers over practically the whole cultivated area of the southern part of the Province. Heavy damage along the margins of wheatfields occurred in a number of localities, and head dropping reduced the yield 1 or 2 bushels per acre in some areas.

Increased abundance of the field cricket was reported in Manitoba and Saskatchewan.

The wheat stem sawfly occurred generally in the Prairie Provinces. In Manitoba, some light to moderate infestations occurred, but were held in

check by the present crop rotation systems. Losses were heavy, however, in Saskatchewan and Alberta. In the former Province damage was widespread and severe, averaging as high as 10 percent in some areas and 15 to 20 percent in others. In Alberta, losses were general and more severe than anticipated, some fields showing a reduction of yield of 3 to 10 bushels per acre. Surveys also showed severe losses in several northern areas where such damage had not previously been recorded.

Wheat crop losses due to Say's stinkbug were more extensive in Alberta than in any season since 1938.

Damage by the wheathead armyworm estimated at 0.5 to 5 percent occurred in west-central Saskatchewan, affecting chiefly wheat seeded on stubble land.

Considerable damage to pastures and field crops by white grubs was reported in southern and south-central Ontario.

The beet webworm was widespread in the Peace River district and throughout the Prairie Provinces. In southern Alberta a small percentage of the beet crop was destroyed and yields were reduced on some 10,000 acres.

The usual reports of conspicuous abundance of the imported cabbage worm were received from various points in the Dominion.

Flea beetles were noted as injurious to crops in the Annapolis Valley, Nova Scotia, and in southern sections of Quebec, Alberta, and in the Victoria district, British Columbia.

The codling moth infestation in the Berwick district, Nova Scotia, was unusually heavy, and for the first time evidence of a second generation was obtained. In Norfolk County, Ontario, first-brood adults were taken as late as September 8. Injury in this area varied from a trace in well-sprayed orchards to as much as 25 percent. Infestations were heavy in southwestern Ontario, but less severe than in 1940, in spite of favorable weather conditions. In the Okanagan Valley, British Columbia, where the most serious outbreak on record had been feared, damage from late codling moth attack was less than expected. This was associated with an unseasonably cool and wet September.

Second-generation oriental fruit moth twig infestation in the Niagara district, Ontario, was only 3.4 percent, compared with 24.3 percent in 1940.

There has been a general reduction in the numbers of the European spruce sawfly in the Maritime Provinces and Quebec, east of the St. Lawrence. The species was recorded for the first time in Newfoundland on August 8.

GENERAL FEEDERS

GRASSHOPPERS (Acrididae)

Michigan. E. I. McDaniel (October 28): Grasshopper eggs are scarce in most sections. Adults of Melanoplus mexicanus Sauss. are still flying in the northern part of the State.

FIELD CRICKET (Gryllus assimilis F.)

Texas. W. C. Maxwell (October 25): Infestation in the vicinity of Robstown has continued throughout the month, with rather large numbers attracted to lights.

WHITE GRUBS (Phyllophaga spp.)

Connecticut. J. P. Johnson (October 22): After doing much damage during the season the larger species of grubs have gone into hibernation, being found from 4 to 24 inches below the surface. One smaller species was still feeding in the upper 2 inches of soil, but approximately one-third of the grubs were from 4 to 6 inches below the surface.

Indiana. J. J. Davis (October 13): Reported as doing considerable damage to pine seedlings in the Federal-State forest nursery at Washington.

Illinois. W. P. Flint (October 23): P. rugosa Melsh. and P. profunda Blanch. have destroyed many acres of corn, soybeans, and pasture in northern and central Illinois. In a number of cases this damage is unusual because the eggs were laid in fields when they were in soybeans. In some areas in central Illinois nearly all the damage is confined to fields that were in soybeans in 1940, when the eggs of the Brood C grubs, which were causing most of the damage, were laid. P. rugosa is the species most abundant in fields that were in soybeans in 1940. (Det. by W. E. Anderson.)

WHITE GRUBS (Cyclocophala spp.)

Connecticut. J. P. Johnson (October 21): C. borealis Arrow generally infested and severely damaged 2 acres in a cemetery at Davis, 4 acres of lawn in South Norwalk, and about two-thirds of the fairways and rough on an 18-hole golf course in Westport. Damage to lawns in Fairfield also.

Indiana. F. Luginbill and H. R. Painter (October 24): C. immaculata Oliv. has been destructive to lawns at La Fayette.

J. J. Davis (October 22): Cyclocerphala sp. has been very destructive to lawns in many sections of the State.

JAPANESE BEETLE (Popillia japonica Newm.)

Connecticut. J. P. Johnson (October 23): Grubs were still feeding in the upper 2 inches of turf, and control measures are being carried out in southern and central Connecticut. Injury was especially severe in the metropolitan areas of New Haven and Hartford.

ORIENTAL BEETLE (Anomala orientalis Wtrh.)

Connecticut. J. P. Johnson (October 24): Damaged many lawns in Hamden, New Haven, and West Haven this fall. Grubs are 4 to 8 inches below the surface and general feeding has ceased.

A SCARABAEID (Anomala undulata Melsh.)

Ohio. G. Still (July 21): Specimens found feeding on grape leaves in Stark County, just east of Canton. Collected on June 10 after a heavy rain. A few days later all beetles disappeared. Leaves showed heavy surface feeding; not sufficient damage to cause permanent injury to vines. On July 17 it was observed that beetles had disappeared and injured leaves turned brown.

WIREWORMS (Elateridae)

Maine. J. H. Hawkins (October 10): The wheat wireworm (Agriotes mancus Say) seriously injured potatoes planted in first-year sod land and in fields where cultivation has not destroyed couch grass in central Maine.

Vermont. H. L. Bailey (October): More abundant than usual, causing considerable damage to potatoes, particularly in Washington County.

Mississippi. C. Lyle, et al. (October 24): Injury to sweetpotatoes was reported from Alcorn, Chickasaw, Lee, Monroe, and Tippah Counties. Some injury was reported from the southwestern counties, where the damage was said to be less severe than that of last year.

Minnesota. A. A. Granvosky (October 21): Wireworms were quite troublesome in lowlands, especially to onions.

Oklahoma. F. A. Fenton (October 23): A. mancus Say reported as damaging wheat in Alfalfa County.

CUTWORMS (Phalaenidae)

Louisiana. E. M. Livingstone (October 15): Fed considerably on young camellias in hotbeds in New Orleans during the first 10 days in October.

Missouri. L. Haseman (October 25): Since the middle of October, in central Missouri, there has been a rather heavy flight of moths of the greasy cutworm (Agrotis ypsilon Rott.) and smaller numbers of one or two other species.

Ohio. T. H. Parks (October 25): Larvae of the yellow-striped armyworm (Prodenia ornithogalli Guen.) were feeding on spinach and tomatoes in the greenhouse at the University at Columbus early in October. Damage severe enough to require control measures.

Nebraska. D. B. Whelan (October 21): Spotted cutworm (Agrotis badinotis Grote) was observed feeding on green tomatoes in Lancaster County on October 19.

General. E. E. Russell (October): In fields heavily damaged by the pale western cutworm (Agrotis orthogonia Morr.) last spring, in Texas County, Okla.; in Deaf Smith, Oldham, Potter, Armstrong, Carson, Gray, Roberts, Hutchinson, Moore, Hansford, and Ochiltree Counties, Tex.; and in Curry and Quay Counties, N. Mex., careful soil diggings showed that there was an extremely light moth emergence and no evidence of survival in sufficient numbers to constitute a threat to crops next spring.

Washington. C. F. Doucette (October): Severe damage by the variegated cutworm (Peridroma margaritosa Haw.) was noted on tomatoes in a greenhouse at Sumner the latter part of the month. Some leaves had been eaten to the main ribs, and green fruits had been gouged out. Larvae collected in the soil were full grown.

ARMYWORM (Cirphis unipuncta Haw.)

Missouri. L. Haseman (October 25): Moths have been unusually abundant around decaying fruit in central Missouri since the middle of October.

Colorado. M. A. Palmer (October 22): Taken in light trap at Fort Collins from June 17 to September 18. Most abundant July 2 to latter part of month. Fairly abundant.

FALL ARMYWORM (Laphygna frugiperda A. & S.)

Maine. A. E. Brower (October): A number of moths appeared at light at Augusta late in September.

New York. L. A. Carruth (October 25): More abundant than usual on Long Island and has been more apparent because of the extended growing season. Similar situation has developed in up-State and western New York.

Virginia. H. G. Walker (October 24): Continued to be destructive during October in many fields of spinach and peas in the Norfolk area.

C. R. Willey (October): Very abundant and caused a great deal of damage to late corn in the eastern part of the State during September.

Mississippi. C. Lyle, et al. (October 24): Severe damage reported to 40 acres of oats in Copiah County on October 23. Caused some damage to velvetbeans and kudzu in the Meridian area and was tunnelling in

ripening tomatoes at State College early in October.

Missouri. H. E. Brown (October 25): Rather serious continuous infestation since late in September, especially over the central section of the State. Includes both maturing larvae and adult moths.

Nebraska. D. B. Whelan (October 21): Larvae were observed feeding on green tomatoes in Lancaster County on October 19.

Texas. R. K. Fletcher (October 21): What appeared to be the fall armyworm was present on carrots at Winter Haven on October 21.

W. C. Maxwell (October 25): Severe infestation on a lawn at Bishop on September 25, with 40 to 50 larvae per square foot. Larvae were feeding on Bermuda grass, sandburs, and to some extent on St. Augustine grass.

SALT-MARSH CATERPILLAR (Estigmene acrea Drury)

Texas. W. C. Maxwell (October 25): General throughout Nueces County, parts of some cottonfields being defoliated. Present on many different host plants.

CEREAL AND FORAGE - CROP INSECTS

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

Ohio. T. H. Parks (October 25): No serious infestation exists in the main wheat crop. Volunteer wheat in stubble fields is now infested with both puparia and larvae, ranging from half to full grown, apparently the result of an early emergence of adults.

Nebraska. H. D. Tate (October 21): Heavy emergence occurred during the latter part of September and the early part of October in the southeastern part of the State, and there was extensive egg deposition on volunteer and early sown wheat.

CORN

EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)

Maine. J. H. Hawkins (October 8): Continues to spread and intensify the infestation in central Maine. First-generation borers in the fields examined are mostly in the stalks below the ear, and many are in the stalk close to the soil surface.

Vermont. H. L. Bailey (October): Less abundant than in 1940. Survey of 14 counties showed that State average was 16.6 per hundred plants, as compared with 39.6 for 1940. Less borer damage to ears of sweet corn reported from canning factories than for several years.

New York. L. A. Carruth (October 25): Late infestations of the second generation were relatively light in eastern New York late in August and in September.

Maryland. F. F. Dicke (October 14): Larvae appeared to be abundant in a corn nursery at Beltsville.

C. M. Packard (October 9): Numerous specimens collected on dahlias and on corn in a garden in northeast Washington. (Det. by C. Heinrich.

Virginia. W. A. Baker (October 24): Additional first records as of October 20 were received from Charles City, Fairfax, Henrico, King George, Loudoun, Prince William, Stafford, and Surry Counties.

Ohio. E. W. Mendenhall (October 8): Numerous in northwestern Ohio, especially in Ottawa County. Damage more severe in the northern section of the State.

Indiana. J. J. Davis (October 22): Appeared in more noticeable and destructive numbers than in any previous year. Reports of damage were received from as far south as Madison on the Ohio River, and as far west as Lafayette. There was a very marked increase in the abundance of moths and larvae in the first generation. Increase of adults, as shown by light-trap catches, of the second generation (or moths which produced the second-generation worms) was much less marked than the year before and the second-generation population of worms was also less than anticipated, owing no doubt to several factors, including drought, which caused considerable firing of the corn, making it undesirable for egg laying or larval development.

W. A. Baker (October 20): First record submitted from Bartholomew County.

Illinois. W. P. Flint (October 23): Nearly half of the counties in the State are infested, the infestation extending entirely across the State from the Indiana to the Iowa line. Counties infested for the first time this year are Stephenson, Boone, Carroll, Ogle, La Salle, Lee, Bureau, Putnam, Marshall, Woodford, Peoria, Tazewell, Logan, De Witt, Macon, Piatt, Christian, Shelby, Moultrie, Douglas, Edgar, Coles, Cumberland, Clark, Crawford, and Lawrence.

Wisconsin. W. A. Baker (October 24): First records as of October 20 reported from Green, Langlade, Marathon, and Sauk Counties.

SUGARCANE BORER (Diatraea saccharalis F.)

Texas. W. C. Maxwell (October 25): Infestation continues in dwarf maize, with at least a part of the infestation being centered in the stem a short distance below the head. Moths have been rather numerous during the month.

CORN EARWORM (Heliiothis armigera Hbn.)

Florida. H. C. Young (October 21): Specimens of caterpillars found feeding on vetch at Svea.

Ohio. T. H. Parks (October 25): Troublesome over entire State, feeding on market and home-garden sweet corn until the end of the season and attempting to mature on the dry kernels. Other crops damaged were lima beans, chrysanthemums near Cleveland, and greenhouse tomatoes near Cleveland and at Columbus.

Indiana. J. J. Davis (October 22): Unusually abundant. Observations were made in Daviess County, in southern Indiana, where every ear was infested.

Illinois. W. P. Flint (October 23): Caused some damage in soybeans during the latter part of September.

Missouri. H. E. Brown (October 25): Moths are still numerous and laying eggs. Larvae in all stages are abundant in late sweet corn in the dough stage and in mature popcorn.

Texas. W. C. Maxwell (October 25): Rather numerous in heads of grain sorghum, one to four specimens per head being found.

Utah. G. F. Knowlton (October 8): Injury to canning corn was severe in many fields at Springville, Tremonton, Brigham, Corinne, Honeyville, Deweyville, and Spanish Fork. Blackbirds reportedly ate many larvae from infested areas in Box Elder County.

CHINCH BUG (Blissus leucopterus Say)

Indiana. C. Benton (October 24): Migration from corn to hibernation quarters started around September 7, with migratory flights from September 7 to 11 and 15 to 25, October 6 to 8, 13 to 14, and 20 to 21. By October 21 over 95 percent of the bugs had left the corn, apparently for hibernation. A scattering of bugs still occurred around foxtail and other grasses in cornfields, in heavy-growth volunteer wheat, and in the rankest stands of early sown rye.

Illinois. W. P. Flint (October 23): Owing to the fact that corn matured early, chinch bugs had nearly all gone into winter quarters before the heavy rains in the north-central part of the State which occurred during October, greatly lessening the effect of the rains in reducing the numbers of this insect.

Missouri. P. C. Stone (October 25): About 90 percent of the late-maturing adult bugs in the central and northern parts of the State have left the few remaining green cornfields for their winter hibernating quarters. Weather conditions prevented any large general fall flight anywhere in the State. A nabid, Pezomachus fusca Stein, common in cornfields, was noted to kill in laboratory from 3 to 13 adult bugs a day during the middle of the month.

SOUTHWESTERN CORN BORER (Diatraea grandiosella Dyar)

Kansas. H. R. Bryson (October 11): Caused considerable injury to corn in the southwestern part of the State, as much as 25-percent injury being reported in some fields. Reported as far north as Minneapolis, Ellis, and Ellsworth.

Oklahoma. F. A. Fenton (October 23): Reported from Woodward and Lamont.

GREEN PLANT BUG (Chlorochroa uhleri Stal)

North Dakota. J. A. Munro (August 14): Large numbers were feeding on corn at Hague.

ALFALFA

SWEETCLOVER WEEVIL (Sitona cylindricollis Fahr.)

Illinois. W. P. Flint (October 23): Adults are very abundant in sweetclover fields in the northern half of the State.

North Dakota. H. S. Telford and C. Wester (October 23): Found in recently harvested sweetclover seed from a seed warehouse in Fargo on September 19.

RED TURNIP BEETLE (Entomoscelis adonidis Pallas)

Minnesota. A. G. Ruggles and assistants (September 14): Specimens submitted with report that it is abundant in alfalfa and sweetclover fields around Greenbush, Roseau County.

ALFALFA CATERPILLAR (Colias eurytheme Bdv.)

Utah. G. F. Knowlton (October 10): Adults were moderately abundant at Willard and Perry, and were observed at Farmington.

PEA APHID (Macrosiphum pisi Kltb.)

Maine. J. H. Hawkins (October 20): Abundant in a few fields of clover in central Maine, and present in some numbers generally. Overwintering eggs are being laid.

Utah. G. F. Knowlton (October 30): The pea aphid is very abundant on succulent alfalfa in some fields in the Kanabville-South Ogden area.

CLOVER LEAFHOPPER (Aceratagallia sanguinolenta Prov.)

Missouri. H. E. Brown (October 25): Rather heavy flight in central Missouri during third week in October.

GRASS

A SKIPPER (Atalopedes campestris Bdv.)

Texas. R. K. Fletcher (October 21): Caterpillars were reported as injuring grazing land in Fannels County on October 1, and in Hays County on August 15.

SORGHUM

SORGHUM WEBWORM (Calana sorghiella Riley)

Indiana. J. J. Davis (October 17): Specimens of larvae reported as damaging feterita near Madison. (Det. by C. Heinrich.)

Oklahoma. F. A. Fenton (October 23): Reported from Boff, Grandfield, Heavener, Chickasha, Duncan, and Stillwater, and has caused widespread damage to grain sorghums throughout a large part of the State.

Texas. W. C. Maxwell (October 25): Practically all fields of grain sorghum show damage. Infestation was found in Egyptian wheat, with the larvae feeding in the lower part of the head where it was partially enclosed by the top sheath.

VELVETBEAN CATERPILLAR (Anticarsia gemmatilis Hbn.)

South Carolina. F. F. Bondy and C. F. Rainwater (October 18): Severe injury to young vetch is being caused by what is presumed to be the soybean caterpillar on the Experiment Station at Florence. Young plants are completely stripped of every leaf and the stems are being attacked.

Georgia. T. L. Bissell (October 16): Few larvae on kudzu and on small volunteer cowpeas.

Florida. J. R. Watson (October 22): One of the heaviest flights ever noticed occurred in the last week of September and the first week in October. Caterpillars severely damaged velvetbeans and peanuts, and caused light damage to cowpeas and soybeans.

Alabama. J. M. Robinson (October 22): Abundant over central and southern Alabama, the last generation being highly parasitized by tachinid eggs. In some areas they are attacked by fungus.

Mississippi. E. W. Dymman, et al. (October 16): This species is attacking alfalfa, which is just coming up in Washington County. There are from one to three small larvae per plant. Older alfalfa is being destroyed by an older brood, and all fields, regardless of age of plants, are heavily infested. Caterpillars pupated about 2 weeks ago and now thousands of moths are present.

T. F. McGehee (October 24): Continue to injure velvetbeans and soybeans. In Harrison County some soybean fields were reported as ruined for hay.

WILD RICE

RICE STALK BORER (Chilo plejadellus Zinck.)

Delaware. H. L. Dozier (September 15): One to three borers were found in most stalks of wild rice examined. A large stand of acres of wild rice on the Cherry Island marsh at Wilmington had gone down flat in muck, and it is believed that this species, together with the drought, was responsible for this extensive condition.

F R U I T I N S E C T S

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Mississippi. L. J. Goodgame (October 24): Injury to peach trees reported from Monroe County.

FLATHEADED APPLE TREE BORER (Chrysobothris femorata Oliv.)

Nebraska. H. D. Tate (October 21): Reported as attacking elm and fruit trees in Stanton County on September 21.

SAN JOSE SCALE (Aspidiotus perniciosus Const.)

Virginia. C. R. Willey (October): Building up very materially.

Ohio. E. W. Mendenhall (October 8): Serious on apple fruit in orchards in the vicinity of Newark, Licking County.

Indiana. J. J. Davis (October 22): Definitely on the increase.

Illinois. S. C. Chandler (October 25): New brood observed during the week in apple and peach orchards in southern Illinois. Infestation very severe generally.

Mississippi. C. Lyle, et al. (October 24): Injuring untreated trees in northeastern counties, the Meridian area, and Jackson, Tallahatchie, and Yalobusha Counties.

WHITE PEACH SCALE (Aulacaspis pentagona Targ.)

Maryland. E. N. Cory (October 20): Very destructive on flowering cherry.

Virginia. C. R. Willey (October): Building up very materially.

H. G. Walker (October 24): Very abundant in the Norfolk area.

Georgia. T. L. Bissell (October 21): Peach grower at Zebulon found four trees in his orchard encrusted. Trees have been treated three successive winters for this scale.

CODLING MOTH (Carpocapsa pomonella L.)

Ohio. T. H. Parks (October 25): Average infestation of blenished fruit, including stings, is 5.66 percent, as compared with 6.17 percent in 1940, the present year's average having been based on inspection of 101 treated commercial orchards. A third generation of larvae was largely responsible for a serious infestation which occurred in Lawrence County, in the southern part of the State, where in some cases as high as 50 percent of the fruit was wormy or stung.

Illinois. W. P. Flint (October 23): Late broods were extremely heavy, and unusually large numbers of larvae have gone into hibernation. Weather conditions during October permitted late-brood worms to reach full maturity.

Michigan. R. Hutson (October 25): Surveys at Grand Rapids, Paw Paw, St. Joseph, Farmington, and Pontiac indicate a late upsurge in codling moth activities at these places.

Missouri. L. Jenkins (October 25): In northeastern Missouri 57 percent of the third-brood larvae had left the apples by October 5. Forty-one percent of those remaining were less than half grown. Over the State as a whole there was greater damage from third-brood larvae than for several years. Band records indicate a high population of overwintering larvae, late varieties showing 50 times greater carry-over of worms than earlier varieties.

Wisconsin. C. L. Fluke (October 21): Second brood more numerous than usual in apple-producing sections of the State.

Utah. C. J. Sorenson (October): Damage was unusually heavy in many apple and pear orchards in Box Elder, Cache, and Utah Counties where fruit set was light and treatment inadequate.

APPLE MAGGOT (Rhagoletis pomonella Walsh)

Michigan. R. Hutson (October 25): Damage has been observed at Detroit, Kalamazoo, Grand Rapids, and Ionia.

Wisconsin. C. L. Fluke (October 21): One of the most severe outbreaks of recent years reported from all sections, including Dane, Door, Jefferson, Kenosha, Ozaukee, Sheboygan, Sauk, Bayfield, and Richland Counties.

WOOLLY APHIDS (Eriosoma spp.)

Mississippi. M. L. Douglass (October 24): The woolly apple aphid (E. lanigerum Hausm.) was observed on young trees in one locality in Yalobusha County.

Tennessee. G. M. Bentley (October 15): Both the top and ground forms of E. americanum Riley are occurring on apples. Observations indicate a predominance of the top, or air form.

Missouri. L. Haseman (October 25): E. lanigerum seems to be less abundant than usual in central Missouri around pruning scars and other injuries on apple trees.

COMSTOCK'S HEALYBUG (Pseudococcus comstocki Kuw.)

Virginia. G. J. Haussler (October 27): In Albemarle County oviposition by females of the third generation was first observed on October 1, about $2\frac{1}{2}$ weeks earlier than females of the corresponding generation were observed to oviposit last year. Weather conditions have been very favorable for development, resulting in the build-up of a high population of overwintering egg masses in many locations. Feeding stages and adult females are still present in considerable numbers in most of the infested orchards. Observations in Clarke and Frederick Counties on October 13 and 14 show that the population of overwintering egg masses now developing appears to be considerably greater than last year.

Ohio. E. W. Mendenhall (October 22): Found on catalpa trees in Columbus and causing some injury.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Connecticut. P. Garman (October 24): Considerable increase in apple orchards during the last 2 months. Heavy deposit of winter eggs noticeable everywhere.

ORIENTAL FRUIT MOTH (Grapholitha molesta Busck)

Georgia. T. L. Bissell (September 29): Terminals of Photinia serrulata at Experiment have been killed since August 12, although they did not seem to be infested at that time.

Mississippi. C. Lyle, et al. (October 24): Twigs of a shrub injured by larvae were recently received from Bolivar County. Reported as injuring peach twigs in the Meridian area, the northeastern counties, and Tallahatchie County. Large numbers of Photinia twigs have been killed at State College.

Missouri. C. Wingo (October 25): Last moth taken in bait jars on September 29. Very little damage to peach twigs in September in the southeastern section of the State. Some damage to apples was noted during the same month. Average moth population throughout this section is much lower than in previous years.

PEACH BORER (Conopia exitiosa Say)

Maryland. O. I. Snapp (October 7): Very heavy infestation at Beltsville as many as 47 borers having been found in a single 10-year-old peach tree.

Michigan. R. Hutson (October 25): Borers of all sizes have been observed at Paw Paw, South Haven, and Fennville.

Mississippi. C. Lyle, et al. (October 24): Reported as causing damage to peach trees in the Meridian area, the northeastern counties, and in Tate, Tallahatchie, and Yalobusha Counties.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia. O. I. Snapp (October 20): All adults have left peach orchards at Fort Valley for places of hibernation, and hibernating population is heavier than that of an average year. Only one of many hibernating females dissected on October 16 contained eggs.

A LEAFHOPPER (Homalodisca triquetra F.)

Florida. J. R. Watson (October 22): Specimen sent from Pensacola, where it was reported as severely damaging young sprouts of peach trees.

PEAR

PEAR PSYLLID (Psylla pyricola Foerst.)

Washington. J. F. Cooper (October 21): Specimens collected in Okanogan and Douglas Counties. (Det. by P. W. Oman.)

PEAR LEAF BLISTER MITE (Eriophyes pyri Pgst.)

Indiana. J. J. Davis (October 22): Abundant in southern Indiana early in the month.

CHERRY

BLACK CHERRY APHID (Myzus cerasi F.)

Montana. H. B. Mills (October 18): Returning migrants more abundant on sweet cherries on East Shore, Flathead Lake, than in several years. Moderate damage.

QUINCE

UNICORN CATERPILLAR (Schizura unicornis A. & S.)

Mississippi. D. W. Grimes (October 24): A number of larvae found on quince in Bolivar County on October 9.

PLUM

RUSTY PLUM APHID (Hysteroneura setariae Thos.)

Minnesota. A. A. Granovsky (October 21): Very abundant.

CURRENT

CURRENT APHID (Capitophorus ribis L.)

Minnesota. A. A. Granovsky (October 21): Very abundant.

GRAPE LEAFHOPPER (Erythroneura comes Say)

Nebraska. H. D. Tate (October 21): Reported as damaging woodbine and grapevines in Franklin and Cherry Counties early in the month.

PECAN

FALL WEBWORM (Hyphantria cunea Drury)

Georgia. O. I. Snapp (October 20): Infestation on pecan trees at Fort Valley, in central Georgia, has not been as heavy as usual.

HICKORY SHUCK WORM (Laspeyresia caryana Fitch)

Mississippi. C. Lyle, et al. (October 24): Specimens on pecan were received from Leake County. Rather heavy infestations reported from Holmes County.

WALNUT CATERPILLAR (Datana integerrima G. & R.)

Mississippi. C. Lyle, et al. (October 24): Injuring pecan trees in Adams County early in October. Rather abundant at State College.

PECAN WEEVIL (Curculio caryae Horn)

Texas. W. S. Price (October 9): Specimens from pecans sent from Gustin

APHIDS (Aphidae)

Georgia. O. I. Snapp (October 17): Infestation of giant hickory aphid (Longistigma caryae Harr.) is still heavy on pecan at Fort Valley. Observations today revealed that a number of limbs on trees in yard had been killed.

Mississippi. M. L. and D. W. Grimes (October 24): Infestations of the black pecan aphid (Melanocallis caryacfoliae Davis) were observed in the Meridian and Durant districts.

OBSCURE SCALE (Chrysomphalus obscurus Comst.)

Mississippi. D. W. Grimes (October 24): Found in most pecan orchards in the southern half of the Mississippi-Yazoo Delta.

CITRUS

POTATO LEAFHOPPER (Empoasca fabae Harr.)

California. R. S. Woglum (October): Green leafhoppers are moving in to central California citrus groves in the same general areas and to the same extent as at this season in past years. Groves along the western edge of the Citrus Belt are the first to be affected. Damage has not been serious and has been confined to navel groves which are generally located near field crops, particularly cotton.

PAPAYA

BEEF ARMYWORM (Laphygma exigua Hbn.)

Florida. A. N. Tissot (September 10): Specimens received of moth reared from larvae collected on July 23 at Orlando on papaya leaves. (Det. by J. F. G. Clarke.)

DATE PALM

RED DATE SCALE (Phoenicobuccus marlatti Ckll.)

California. P. Simmons (October 11): The red date scale is plentiful on date palm leaf bases of the 1939 growth at Indio, Riverside County. More recent leaf bases were not examined.

T R U C K - C R O P I N S E C T S

CUCUMBER BEETLES (Diabrotica spp.)

Florida. J. R. Watson (October 22): D. balteata Lec. was reported as inflicting considerable damage on all truck crops at Bradenton.

Maine. J. E. Hawkins (October 20): Striped cucumber beetles (D. vittata F.) are feeding on immature squash left in fields at Orono, and are very abundant for this time of year.

Indiana. J. J. Davis (October 22): Spotted cucumber beetle (D. duodecimpunctata F.) was damaging the flowers of chrysanthemum in greenhouses at La Fayette the middle of October.

Missouri. L. Haseman (October 25): D. vittata present in about usual numbers around fruit and late cucurbits in central Missouri. D. duodecimpunctata has been more abundant than usual in central Missouri, feeding on various flowers, including dahlias and roses, and also feeding in injured late apples.

Minnesota. A. A. Granovsky (October 21): D. vittata is always present in numbers; D. duodecimpunctata is scarce and much less important.

BLISTER BEETLES (Epicauta spp.)

Mississippi. C. Lytle, et al. (October 24): Adults of the southern striped blister beetle (E. lemniscata F.) caused some injury to turnips in one locality of Oktibbeha County. Adults of the margined blister beetle (E. marginata F.) were received from one locality in Oktibbeha County where they were feeding on clematis.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus Zell.)

Georgia. T. L. Bissell (October 16): Commonly infesting old cowpea plants that are ceasing to bear and small volunteer plants on recently plowed ground. More numerous on beans and cowpeas than on corn at Experiment.

Texas. S. E. Jones (October 21): Found on spinach at Winter Haven on October 21.

TARNISHED PLANT BUG (Lygus pratensis oblineatus Say)

Missouri. L. Haseman (October 25): Unusually large number on late vegetables, flowers, and fruits through central Missouri during the latter part of October.

SOUTHERN GREEN STINKBUG (Nezara viridula L.)

Mississippi. C. Lytle, et al. (October 24): Adults and nymphs were received from Harrison County on October 13, where they were collected from soybeans. Also reported as injuring turnips in George County.

GREEN STINKBUG (Acrosternum hilare Say)

Alabama. J. M. Robinson (October 22): Reported on tomatoes, beans, and peas over the southern half of the State. Has caused almost complete failure of crops and has transmitted virosis in tomatoes especially.

GARDEN SLUG (Agriolimax agrestis L.)

Oregon. B. G. Thompson (October 23): Very serious in vetches, Austrian winter peas, and crimson clover, covering approximately 200,000 acres in the Willamette Valley.

POTATO

POTATO TUBER WORM (Gnorimoschena operculella Zell.)

Delaware. L. A. Stearns (October 8): Specimens of infested potatoes received from Dover, where they were stored. Investigation revealed no field infestation.

Virginia. H. G. Walker (September 23): No infested potato plants found in survey of several fields made last spring. Recent survey of fall potato fields in Princess Anne County and on the Eastern Shore of Virginia indicated that tuber worms were in practically all of the

fields and that several fields near Onley and Accomac, both in Accomac County, were severely infested, whereas it was difficult to find them in several fields near Temperanceville and New Church, also in Accomac County. Most of the worms had pupated at the time the survey was made.

C. R. Willey (October 1 and 2): Very abundant and doing considerable damage, together with the drought, to several potato fields on the Eastern Shore.

Louisiana. W. E. Anderson (October 2): Survey made this year throughout the State showed that there were 6 infested properties in St. James Parish, 3 in St. John the Baptist Parish, 58 in Terrebonne Parish, 54 in Lafourche Parish, and 1 in Iberville Parish.

TOMATO PINWORM (Keiferia lycopersicella Busck)

Missouri. J. A. Denning (October 21): During the first week of September an infestation was reported from Manchester Road in Kirkwood, St. Louis County. Infestation appears to have originated in a greenhouse where tomatoes are being produced by liquid culture. Reported by owner as present for first time on tomato plants. Other infestations found a mile away from the greenhouse.

CORN EAR WORM (Heliothis armigera Hbn.)

New York. L. A. Carruth (October 25): Number of serious infestations have developed in various sections of New York State. Infestations found on celery and lettuce on Long Island, owing to absence of appreciable acreages of late sweet corn. Similar situation has developed in up-State and western New York, where the ear worm is much more abundant than usual.

Maryland. L. F. Ditman (October 22): Caused considerable damage to late tomatoes, lima beans, and string beans in Prince Georges County, and to a number of other garden vegetables, such as cabbage and eggplant, which are not usually attacked.

Virginia. L. W. Brannon (October 29): Severely damaged bean pods in many fields of fall snap and lima beans in the Norfolk area and on the Eastern Shore. In one field of untreated snap beans 27 percent of the pods were damaged.

Mississippi. M. L. Grimes (October 24): Some damage to tomatoes noted in the Meridian area.

Nebraska. D. B. Whelan (October 21): Larvae were observed feeding on green tomatoes in Lancaster County on October 19.

Utah. G. F. Knowlton (October 8): Cannons reported that 8 to 10 percent of the tomato fruits brought in had been infested.

TOMATO WORM (Protoparce sexta Johan.)

Mississippi. C. Lyle, et al. (October 24): One adult was received from Humphreys County. Infestations have been reported as fairly heavy in Alcorn, Lee, Monroe, and Union Counties.

Texas. W. C. Maxwell (October 25): Some damage is being done to a small acreage of tomatoes near Robstown.

POTATO LEAFHOPPER (Empoasca fabae Harr.)

Tennessee. G. M. Bentley (October 22): Very common in untreated areas in Cumberland, Putnam, Roane, Scott, Morgan, and Fentress Counties.

POTATO PSYLLID (Paratrioza cockerelli Sulc)

Utah. G. F. Knowlton (October 18): Few cases of injury observed this season.

A BEETLE (Phyrdenus bullatus Csy.)

Arizona. R. A. Flock (September 2): Seriously attacking tomatoes at Benson, Cochise County.

BEANS

MEXICAN BEAN BEETLE (Boilachna varivestis Muls.)

Alabama. J. M. Robinson (October 22): Moderately abundant in Auburn on October 20.

Mississippi. C. Lyle, et al. (October 24): Specimens received from Montgomery County on September 16. Recently reported for the first time from Holmes County. Injuring late beans in the Meridian area and in Alcorn, Benton, Choctaw, Lafayette, Marshall, Monroe, Panola, and Webster Counties.

South Dakota. H. C. Severin (September 30): Found in western part of State.

BEAN LEAF BEETLE (Cerotoma trifurcata Forst.)

Maryland. C. Z. Keller (September 18): Present in Princess Anne County.

Mississippi. C. Lyle (October 24): Adults were causing injury to snap beans in the Gulfport and Grenada districts, lima beans in Holmes County, and soybeans in the Grenada area.

POTATO LEAFHOPPER (Empoasca fabae Harr.)

Florida. J. P. Watson (October 22): Severely curled most of the bean leaves, especially in the north and central parts of the State.

BEAN LEAF ROLLER (Urbanus proteus L.)

Florida. J. R. Watson (October 22): Larvae very abundant in northern and central parts of the State.

BEAN THRIPS (Eurothrips fasciatus Perg.)

Utah. G. F. Knowlton (October 8): Generally abundant and injuring string beans in Davis County.

PEAS

PEA APHID (Macrosiphum pisi Klth.)

Virginia. H. G. Walker (October 24): Has been very abundant in spots in peafields at Norfolk.

CABBAGE AND TURNIPS

IMPORTED CABBAGE WORM (Pieris rapae L.)

Maine. J. H. Hawkins (October 20): Generally affected late untreated cabbage in central Maine.

Virginia. H. G. Walker (October 24): Has been moderately abundant in some fields of crucifers at Norfolk and rather scarce in others.

S. B. Fenne (October 27): Causing severe damage to cabbage, collards, and kale in eastern Virginia. Much parasitization by fungus, bacteria, and insects.

Mississippi. D. W. Grimes and N. D. Peets (October 24): Reported as damaging collards in Holmes County and cabbage in Copiah, Claiborne, and Lincoln Counties.

Missouri. L. Haseman (October 25): Heavy late infestation has occurred through central Missouri, owing to prolonged mild weather into October.

SOUTHERN CABBAGE WORM (Pieris protodice Ddv. & Lec.)

Virginia. H. G. Walker (October 24): Larvae have been abundant enough to cause considerable damage in several collard fields in the Norfolk area and on the Eastern Shore of Virginia.

Mississippi. C. Lyle (October 24): Very abundant on turnips at State College.

CABBAGE LOOPER (Autographa brassicae Riley)

Virginia. S. B. Fenne (October 21): Causing severe injury generally in southwestern and eastern Virginia to cabbage, collards, and kale.

H. G. Walker (October 24): Outbreak more severe than ever before in eastern Virginia. Some fields of crucifers have been ruined and many others severely damaged.

Texas. W. C. Maxwell (October 25): Infestation on cabbage in Nueces County with rather severe damage to some fields.

Colorado. M. A. Palmer (October 20): Most abundant in light trap at Colorado State College at Fort Collins from June 16 to 24, and taken up to August 21.

DIAMONDBACK MOTH (Plutella maculipennis Curt.)

Virginia. H. G. Walker (October 24): Larvae are becoming very abundant and troublesome in a great many fields of crucifers in the Norfolk area.

CABBAGE WEBWORM (Hellula undalis F.)

Virginia. H. G. Walker (October 24): Present but has not been abundant enough to cause any appreciable amount of damage in the Norfolk area.

Georgia. T. L. Bissell (October 1): Webbing and killing the tops of candytuft.

Mississippi. M. L. Grimes (October 24): Has done some damage to turnips in the Meridian area.

Texas. W. C. Maxwell (October 25): Infestation in some of the cabbage fields near Robstown, a small percentage of the plants being severely damaged.

APHIDS (Aphididae)

Virginia. S. B. Fenne (October 27): Causing considerable damage generally to cabbage, kale, and brussels sprouts.

Missouri. L. Haseman (October 25): Turnips and cabbage are showing a light infestation in central Missouri.

HARLEQUIN BUG (Murgantia histrionica Hahn)

Maryland. J. Key (September 2): Present at Chaptico.

Mississippi. C. Lyle, et al. (October 24): Specimens were received from Claiborne County where they were feeding on cabbage, collards, and turnips. Reported as damaging collards and turnips in the Grenada and Meridian districts; also reported from Attala County.

California. R. E. Campbell (September 25): Numerous and breeding all summer on bladder-pod and wild mustard at San Juan Capistrano. As these host plants dried up the bugs began migrating. A cauliflower seedbed was infested and seriously damaged.

SQUASH

SQUASH BUG (Anasa tristis Deg.)

Missouri. L. Haseman (October 25): Present on late cucurbits in central Missouri. Numerous bugs matured around the middle of the month.

EGGPLANT

EGGPLANT LACEBUG (Gargaphia solani Heid.)

Mississippi. C. Lyle (October 24): Specimens received from Monroe County on September 21. Abundant at State College early in October.

SPINACH AND BEETS

HAWAIIAN BEET WEBWORM (Hymenia fascialis Cram.)

Virginia. H. G. Walker (October 24): Very abundant in early planted spinach at Norfolk during the month. Apparently large numbers built up on pigweed and lambsquarter during August and September, and then migrated to spinach as soon as it became available.

Texas. S. E. Jones (October 21): Present on beets at Winter Haven.

ONIONS

ONION THRIPS (Thrips tabaci Lind.)

Georgia. T. L. Bissell (October 1): Small seedlings of carnation are stunted and distorted by thrips. Possibly onion thrips, as wild onions in beds are also infested.

Utah. G. F. Knowlton (October 8): Caused injury to onions in several parts of Weber County during the year.

ONION MAGGOT (Hydomyza antiqua Meig.)

Nevada. G. G. Schweis (October 22): Reported as having injured from 1 to 2 percent of the onion crop.

STRAWBERRY

STRAWBERRY CROWN BORER (Tyloclonus fragariae Riley)

Mississippi. L. J. Goodgame (October 24): Specimens were found in the roots of strawberry plants in one locality in Alcorn County.

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus L.)

Oregon. J. Davis (October 14): Damaged 5 acres of a 40-acre strawberry patch at Tigard.

SWEETPOTATO

SWEETPOTATO WEEVIL (Cylas formicarius F.)

Kansas. H. R. Bryson (October 5): Specimen received from Hutchinson. First record of its occurrence in the State.

Texas. C. A. Richmond (November 1): Causing serious damage to sweet-potatoes in Quemado Valley, Maverick County.

SWEETPOTATO LEAF ROLLER (Pilocrocis tripunctata F.)

Mississippi. M. M. High (October 24): Specimens were collected in sweet-potato field in Harrison County on October 6.

SWEETPOTATO HORNWORM (Herse cingulata F.)

Georgia. T. L. Bissell (October 31): Larvae were very abundant on young sweetpotato vines at Doerun, in Colquitt County, southwestern Georgia on September 26. On September 30 the correspondent reported that larvae had disappeared. Moths have just emerged.

TOBACCO

POTATO TUBER WORM (Gnorimoschena operculella Zell.)

Georgia. M. Murphey, Jr. (October 4): Specimens collected in tobacco at Fitzgerald, Ben Hill County, on July 24.

Florida. F. S. Chamberlin (October 13): Specimens collected on tobacco at Quincy on July 8. (Det. by C. Heinrich.)

SUCKFLY (Dicophus minimus Uhl.)

North Carolina. C. F. Stahl (September 29): Specimens collected on tobacco at Oxford on September 24. (Det. by H. G. Barber.)

C O T T O N I N S E C T S

BOLL WEEVIL (Anthonomus grandis Boh.)

Virginia and South Carolina. F. F. Bondy and C. F. Rainwater (October 25) Numerous in second-growth cotton in the eastern and central parts of the Carolinas and the southeastern part of Virginia. (November 1) Far less numerous in fields in Florence County where stalks have not been destroyed than would be expected. In last year's collection for the November 1 installation, a large number of weevils were newly emerged and had not fed sufficiently to put them in good condition for hibernation. This year no newly emerged weevils have been seen and all seem to be in good condition.

Georgia. P. M. Gilmer (October 18): Still present in large numbers in all fields in Tift and Berrien Counties showing squares or much foliage. There is a large amount of feeding but not many larvae present in squares. Cotton has ceased blooming because of the extensive feeding injuries. (October 25): Still numerous in most fields in Tift County.

Florida. C. S. Rude (October 25): Abundant in fields where cotton is still putting on squares. Parasites from Peru are being released in a heavily infested field at Gainesville.

Alabama. J. M. Robinson (October 22): Continue to feed on second growth of leaves and late square formation on cotton throughout the State.

Tennessee. G. M. Bentley (September 25): Light infestation in late top squares, with very little injury. Field at Millington, in Shelby County, showed highest infestation of punctured squares.

Mississippi. E. W. Dunnan, et al. (October 25): Concentrated in a few fields in Washington County where food is plentiful. Square examinations showed that weevil eggs were hatching in second-growth squares. Some larvae were found approximately one-third grown. Reports from an adjoining county indicated that no larvae could be found in second-growth squares. Most weevils found were near wooded areas in green cotton. (October 11): Much green foliage is present in Washington County for boll weevil food. Many squares are large enough for egg deposition, but many of them have been punctured and fed upon so that apparently no weevils will emerge.

Louisiana. R. C. Gaines, et al. (October 25): Not so numerous as at the same time last year.

Oklahoma. C. F. Stiles (October 31): Has decreased through most of the southeastern part of State during the last month, owing to complete defoliation of cotton stalks in many fields by the cotton leaf worm. A 30-minute examination in a field in Pottawatomie County on October 14 revealed only one weevil. This field was heavily infested during August.

Texas. K. P. Ewing, et al. (October 25): Abundant in McLennan, Falls, and Limestone Counties wherever squares and new growth are found.

W. C. Maxwell (October 25): Heavy infestation continues throughout the Coastal Bend section, with practically all of the young fruit badly infested.

COTTON LEAF WORM (Alabama argillacea Hbn.)

Massachusetts. A. I. Bourne (October 8): Reported from points around Fitchburg, in the northeastern part of the State, and reported generally throughout much of eastern Massachusetts.

- L. E. Gibson (October 7): Thousands of adults were seen clustered around the electric lights at Greenfield and were matted on lighted store windows. First heavy flight seen in this section for many years.
- Rhode Island. A. I. Bourne (October 8): Flights in Providence and vicinity reported over the radio.
- Illinois. W. P. Flint (October 23): Very heavy flights occurred in central Illinois on nights of October 1 and 2.
- Michigan. R. Hutson (October 25): Appeared at lights for the last month in the vicinity of Hale, Paw Paw, St. Joseph, Shelby, Grand Rapids, and Lansing.
- Missouri. A. C. Burrill (September 18): Fifty moths entered a window at the capitol building in Jefferson City on September 16.
- Nebraska. H. D. Tate (October 21): Specimens received from Hall County on September 24 with report that they were damaging ripe strawberries. Moths of this species were observed at lights on a number of occasions in Lancaster County during the latter half of October. Reported as present on one occasion in large numbers in Omaha, Douglas County.
- Virginia. F. F. Bondy and C. F. Rainwater (October 25): Present in the southeastern part of the State, but very few fields were defoliated.
- North Carolina and South Carolina. F. F. Bondy and C. F. Rainwater (October 25): Found throughout eastern and central parts of the Carolinas, but very few fields were defoliated. Around Florence defoliation was much heavier during the last 2 weeks than at any other time. Some fields are practically defoliated but parasitization of the pupae is very high. (November 1): Present in fields in Florence County where stalks are still standing; considerable defoliation during the week; largest population of any time during the season.
- Georgia. P. M. Gilmer, et al. (October 18): Still present in occasional fields in Tift and Berrien Counties, but rather uncommon. (October 25): Few scattered worms are still to be found. No serious defoliation in the Tift County area and little serious ragging.
- T. L. Bissell (October 22): Infestations reported during September from Sunter, Bullock, Pulaski, Polk, and Terrell Counties. Worms were abundant at Experiment on October 15, and from October 16 to 21 there were many moths at lights.
- Florida. C. S. Rude (October 11): Defoliated many fields but became serious so late that defoliation did little or no damage. (November 1): New brood appeared in many fields that had been defoliated 6 weeks ago.

J. R. Watson (October 22): Defoliated most fields of cotton in the central part of the State.

Alabama. J. M. Robinson (October 22): Defoliated cotton throughout the State.

Tennessee. G. M. Bentley (October 18): Nearly all of the larvae have disappeared. Rather heavy infestation late in the season in the cotton-growing counties of western Tennessee; heavy defoliation in the middle and lower counties. Comparatively little damage was done, as the bolls were well developed, and only in late-planted cotton was there any loss in the development of top bolls.

Mississippi. C. Lyle, et al. (October 24): Light late infestations were reported from the Meridian area, and signs of feeding were observed in Humphreys County.

E. W. Dunnam, et al. (October 11): Many moths are present in nearly all fields in Washington County. A new brood appears to be hatching, as there are many very small larvae on cotton in some treated fields. No small worms have been noted on second growth following earlier infestations. (October 25): A few fields in Washington County have been completely stripped the second time.

Louisiana. R. C. Gaines, et al. (October 25): Some cotton in Madison Parish was defoliated or badly ragged during the past week. Found in most fields but not developing because nights are cool.

Oklahoma. C. F. Stiles (October 1): Defoliated from 80 to 95 percent of the cottonfields in the eastern half of the State. Approximately 50 percent have been defoliated in the extreme southwestern portion of the State. From Hobart north to the northern limits of the Cotton Belt, the defoliation ranges from none to 50 percent. Moths are present by the thousands in most of the fields on the west side of the State and eggs are numerous.

Texas. K. P. Ewing, et al. (October 25): Scattered specimens can be found in some localities in McLennan, Falls, and Limestone Counties.

L. W. Noble (October 25): Present at Presidio but not in sufficient numbers to defoliate the plants.

W. C. Maxwell (October 25): Many fields in the Coastal Bend section have been partially defoliated during the last month. Many moths now present.

Arizona. T. P. Cassidy and W. A. Stevenson (September 27): Heavy population was reported from practically all cotton-growing areas in the Santa Cruz Valley, with the exception of the Marana area, where treatment was given.

PINK BOLLWORM (Pectinophora gossypiella Saund.)

Texas. Jessie M. Harper (October 14): Inspection in Nueces County was discontinued, no specimens having been found for the season. During the season a total of 28 specimens was found in Cameron County and 3 in Hidalgo County.

L. W. Noble (October 18): Infestation counts for the first half of October were completed at Presidio. Larval populations per acre at 15-day periods from August 1 to October 15 show that the larval population was slightly lower than last year.

S. D. Smith (September 23): Specimen found on September 12 in gin trash at El Indio, Maverick County, which originated from the Quemado Valley in the same county.

Arizona. Jessie M. Harper (October 7): Only findings in the regulated area of Arizona have been at Glendale in Maricopa County.

COTTON APHID (Aphis gossypii Glov.)

South Carolina. F. F. Bondy and C. F. Rainwater (October): Abundant in all cotton in Florence County during the week ended November 1, and particularly on cotton that has sprouted from stalks that have been cut.

Georgia. P. M. Gilmer, et al. (October 18): Aphids are uncommon in Tift and Berrien Counties, only an occasional plant showing a few large-type forms.

Florida. C. S. Rude (October 11): Not numerous.

Mississippi. E. W. Dunnam, et al. (October 4): No large dark-form aphid were noted in cotton in Washington County during the week. Aphids generally scarce.

M. L. Grimes (October 24): Heavy infestations were observed in fields treated for boll weevils.

COTTON FLEA HOPPER (Psallus seriatus Reut.)

South Carolina. F. F. Bondy and C. F. Rainwater (October): Larger number than usual seen in Florence County.

A PENTATOMID (Chlorochroa ligata Say)

Texas. L. W. Noble (October 18): Adults were still present at Presidio and causing damage to late cotton bolls.

COTTON STAINER (Dysdercus suturolus H. S.)

Florida. C. S. Rude (October 4): Single specimen found on Caesar weed at Melbourne. Very abundant on this plant 2 years ago. Stainer was fairly numerous in cotton growing on Merritt Island, near the north end. Colony of nymphs on 1 boll in each 130 bolls.

F O R E S T A N D S H A D E - T R E E I N S E C T S

GYPSY MOTH (Porthotria dispar L.)

New Hampshire. A. F. Burgess (October 14): From September 29 to October 4 examination was made of the tree growth at several points in areas north of Lake Winnepesaukee in and near Moultonboro. Favored food plants in large woodland areas in this vicinity have been severely defoliated one or more times during the last 10 or 12 years. Latest defoliations occurred during the summers of 1940 and 1941 when many of the oaks were from 50- to 100-percent defoliated. Examination of oak shows some already dead and others dying. The oak over much of a trail, approximately 1 3/4 miles long to the top of a hill with an elevation of over 2,000 feet, was found to have suffered severely. In some places from 25 to 50 percent of it is dead and in some instances there are pockets where the mortality is complete. Old and new egg clusters are abundant from the base to the top of the hill.

Vermont. A. F. Burgess (October 6): Scouting crew in Salisbury Township, Addison County, recently found a woodland infestation in a stand of mixed hardwoods. Only three new egg clusters were found.

Massachusetts. A. F. Burgess (October 14): Infestation covering approximately 30 acres has been found in Richmond Township, Berkshire County.

FALL WEBWORM (Hyphantria cunea Drury)

Mississippi. C. Lyle, et al. (October 24): Light damage was reported to pecan and hickory in Alcorn County and to pecan in Monroe County. No late colonies have been observed in Choctaw and Oktibbeha Counties.

Texas. W. C. Maxwell (October 25): Light infestation present on mulberry in Robstown. Appears to be the third distinct brood this year.

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

Mississippi. L. J. Goodgame (October 24): Caused some damage to arborvitae in Alcorn and Monroe Counties.

Kansas. H. R. Bryson (October 23): Reported as abundant at Bronson.

Oklahoma. F. A. Fenton (October 23): Reported from Seminole and Drumright.

Texas. R. K. Fletcher (October 21): Reported from Canyon on October 9. One of the most important pests of evergreen ornamentals in the State.

WALKINGSTICK (Diapheromera femorata Say)

Minnesota. A. G. Ruggles and assistants (October 10): Still numerous in the north end of Wadena County.

ASH

AN ASH FLOWER GALL (Eriophyes fraxiniflora Felt)

Nebraska. H. D. Tate (October 21): Infested ash twigs received from Cedar County on October 5.

CARPENTER WORM (Prionoxystus robiniae Peck)

Texas. W. C. Maxwell (October 25): Many young ash trees in Robstown have been severely damaged.

BEECH

A WOOLLY APHID (Phyllaphis fagi L.)

Michigan. R. Hutson (October 25): Colony was discovered along river bank on Michigan State Campus at East Lansing during the week.

BIRCH

BIRCH SKELETONIZER (Bucculatrix canadensisella Chamb.)

Maine. J. V. Schaffner, Jr. (October 27): Caused widespread browning of white birch foliage in vicinity of Eustis and Jin Pond.

New Hampshire. J. V. Schaffner, Jr. (October 27): Prevalent on white birch in the vicinity of Stark, Coos County.

BIRCH LEAF-MINING SAWFLY (Phyllotoma nemorata Fall.)

Maine. J. V. Schaffner, Jr. (October 27): Prevalent on white birch on Route 3 from Ellsworth to Bar Harbor and on Route 1 from Ellsworth to Franklin, in Hancock County, during September. Lighter infestations noted on Route 9, east of Beddington.

ELM

LARGER ELM LEAF BEETLE (Monocesta coryli Say)

Mississippi. C. Lytle, et al. (October 24): Specimens received from Jones and Lauderdale Counties, where Japanese elm, pecan, and native elm had been injured.

ELM SCUFFY SCALE (Chionaspis americana Johns.)

Delaware. E. P. Felt (October 22): Extremely abundant on elms at Horn Point.

FIR

A WEEVIL (Thricolepis inornata Horn)

Arizona. H. Krauch (October 17): Specimen was observed defoliating terminal leaders of young growth on Douglas fir saplings in the Apache National Forest. Considerable damage noticed, but only one beetle was found at time of observations, in last week of August. (Det. by L. L. Buchanan.)

HACKBERRY

A HACKBERRY BLISTER GALL (Pachypsylla celtidis vesiculum Crawford.)

Pennsylvania. E. J. Udine (October 6): Very abundant on hackberry on campus at Carlisle, ranging from 5 to 10 per square inch on wooden pillars.

LOCUST

LOCUST TWIG BORER (Ecdytolopha insiticiaria Zell.)

Maryland. O. O. Thronen (October 24): Specimens of injured pink locust stem and leaves collected at Silver Spring. (Det. by C. Heinrich.)

Mississippi. C. Lyle (October 24): Injured about one-third of the black locust trees in a nursery at Mississippi State College.

LOCUST BORER (Cyllene robiniae Forst.)

Indiana. J. J. Davis (October 21): Reported from a number of localities.

MAPLE

PIGEON TRETEX (Trenex columba L.)

Rhode Island. B. Eddy (October 27): Infested sugar maple in Providence.

NORWAY MAPLE APHID (Periphyllus lyropictus Kess.)

Utah. G. F. Knowlton (October 10): Moderately abundant on Norway maple at Brigham.

WOOLLY MAPLE LEAF SCALE (Phenacoccus acericola King)

Rhode Island. B. Eddy (September 23): Present and causing considerable damage on branches and leaves of several sugar and red maples in Lincoln.

OAK

ORANGE-STRIPED OAK WORM (Anisota senatoria A. & S.)

Rhode Island and Connecticut. J. V. Schaffner, Jr. (October 27): Stripping of scrub, scarlet, and black oak is noticeable between Westerly, R. I. and Old Lyme, Conn.

Mississippi. T. F. McGehee (October 24): Larvae, probably belonging to this species, have stripped almost all of the foliage from an oak tree in Harrison County.

LEAF GALLS (Neuroterus spp.)

General. E. P. Felt (October 22): N. minutus Bass. has been exceptionally abundant in the Northeastern States, and in some places has caused extensive reduction in leaf development.

Indiana. J. A. Hyslop (October 28): Specimens of N. laurifoliae Ashm. were collected at Terre Haute. (Det. by A. B. Gahan.)

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana Schiff.)

General. J. V. Schaffner, Jr. (October 27): Infestations have been increasing during the last 3 years in older portions of infested areas of Connecticut, New York, and New Jersey, owing to absence of abnormally low winter temperatures. Red pines have been severely infested at Brockton, Mass., and in the vicinity of Dover, N. Y.

NANTUCKET PINE SHOOT MOTH (Rhyacionia frustrana Comst.)

Nebraska. H. D. Tate (October 21): Reported as causing severe damage to young windbreak plantings of ponderosa pine in western Nebraska.

PINE BEETLES (Dendroctonus spp.)

Georgia. O. I. Snapp (October 23): D. frontalis Zimm. has attacked ornamental pine trees on a farm near Fort Valley in central Georgia and has killed parts of the trees.

Utah. G. F. Knowlton (October 21): Dendroctonus spp. are damaging lodgepole pines in the Wasatch and Ashley National Forests, and yellow pine in the Powell and Dixie Forests.

WHITE-PINE WEEVIL (Pissodes strobi Peck)

New England. J. V. Schaffner, Jr. (October 27): Reported that there was a considerable reduction, as compared with 1940, in the number of attacks on white pine leaders throughout New England and New York, approximately 40 percent being attacked in some cases. Six infested red pine leaders were observed in a 9-year-old plantation of mixed red and white pine, where only 8 percent of the white pine has been attacked in 1941.

A WEEVIL (Hyllobius radicis Buch.)

Massachusetts. J. V. Schaffner, Jr. (October 27): Infestation still persists in a plantation of Corsican and Scotch pine on a watershed in Weston, which was first noticed to be infested after the hurricane of September 1938 had broken over many of the trees. Adult feeding scars are very noticeable on many of the small branches, and the root crowns of most trees are badly damaged. Each year since 1938 a few trees have died and were removed.

A SCOLYTID (Pityophthorus raniperdi Swaine)

Maine. A. E. Brower (October 1-5): Reported as injuring several large ornamental white pines at Bar Harbor.

PINE SAWFLIES (Neodiprion spp.)

Virginia. L. A. Hetrick (October 9): Adults of N. americanum Leach are emerging in parts of King William and King and Queen Counties. Earlier than usual, but heavy emergence has not yet taken place. Overwintered eggs are being deposited into the sides of the pine needles. (October 16): Second-generation larvae of N. lecontei Fitch were feeding on seedling loblolly pines in a forest-tree nursery at West Point. Most larvae were in fifth instar.

Georgia. T. L. Bissell (October 1): Larvae of N. lecontei found in clusters on young pine trees at Doerun, Colquitt County.

PINE NEEDLE SCALE (Chionaspis pinifoliae Fitch)

Indiana. J. J. Davis (October 22): Reported as abundant from many places in the State.

Utah. G. F. Knowlton (October 22): Attacking Austrian pine and spruce at Logan.

POPLAR

TULIPTREE SCALE (Toumeyella liriodendri Gmel.)

Tennessee. G. M. Bentley (September 23): High infestation present on terminal twigs of yellow poplar. Injury is general from Chattanooga to Bristol. First appearance of injury. (Det. by H. Morrison.)

SPRUCE

EUROPEAN SPRUCE SAWFLY (Gilpinia polystoma Htg.)

New England. P. B. Dowden (October 27): Reported that there has been practically no defoliation by this insect in southern New Hampshire and southern Vermont. Larval disease has been reported as common in the northern part of Maine with a consequent reduction in infestation. In

eastern Maine the infestation is generally light to modium, and in the central and western parts of the State there have been moderate increases in infestation at a number of points. Moderate infestations persist in some of the old-growth stands, notably Cornell Mountain, in the Catskills of New York; Green Peak and Mount Equinox, in southern Vermont; and the Scott's Bog area of Pittsburg, in northern New Hampshire. Infestation of Deer Mountain, in Pittsburg area, N. H., has decreased noticeably since last year. Light infestation also persists in a number of plantations in New York State.

Vermont. H. L. Bailey (October): Fall-scouting inspections show very light infestation in northern Vermont sections. No complete defoliation, with an occasional tree showing feeding.

YELLOW-HEADED SPRUCE SAWFLY (Pikonema alaskensis Roh.)

New Hampshire. J. V. Schaffner, Jr. (October 27): Defoliated the new growth on some ornamental spruce trees on a camp ground in the White Mountain National Forest.

EASTERN SPRUCE BEETLE (Dendroctonus piceaperda Hopk.)

New Hampshire. J. V. Schaffner, Jr. (October 27): No new outbreaks were noted in 2 weeks of scouting on the White Mountain National Forest. A few infested trees were found in the Crawford Notch area, where a heavy infestation was found in 1940.

Vermont. J. V. Schaffner, Jr. (October 27): Infestations on the permanent sample strip on Monastery Mountain, Middlebury Gap road, showed a slight decline, 0.1 tree per acre being attacked this year as compared with 0.203 per acre in 1940.

BARK BEETLES (Ips spp.)

Virginia. L. A. Hetrick (October 17): I. calligraphus Germ. and I. grandicollis Eichh. are infesting two large Norway spruce trees in National Cemetery at Seven Pines.

INSECTS AFFECTING GREENHOUSE

AND ORNAMENTAL PLANTS

STALK BORER (Papaipema nebris nitela Guen.)

Indiana. J. J. Davis (October 22): Reported from several places in northern Indiana as abundant early in September. Phlox was commonly reported as the host plant.

A SOD WEBWORM (Crambus sperryellus Klots.)

California. C. K. Fisher (September 6): Adults collected at porch light. Appears to be species commonly seen flying low over lawns in the evening or resting near porch lights in Fresno, and its larvae are probably

responsible, in part at least, for damage to newly established lawns in this area. (Det. by C. Heinrich.)

TWIG GIRDLER (Oncideres cingulata Say)

Florida. J. R. Watson (October 22): Damage to cajuput trees was reported from Dunedin and Sarasota.

WHITEFLIES (Aleyrodidae)

Mississippi. G. R. Swank and E. M. Livingstone (October 15): Caused considerable damage to viburnum in Gulfport during the summer.

Louisiana. T. M. Livingstone (October 15): Less abundant on ornamentals in New Orleans this summer than in 1940.

SCALE INSECTS (Coccidae)

Virginia. C. R. Willey (October): Lepidosaphes ulmi L. and Chionaspis furfura Fitch have been observed to build up very materially this season.

South Carolina. J. A. Berly (September 26): The cottony cushion scale (Icerya purchasi Mask.) sufficiently abundant on Pittosporum at Moultrieville to require control measures.

Georgia. T. L. Bissell (October 22): The grape mealybug (Pseudococcus maritimus Ehrh.) found on stems of Chamaecrista spp., just below the ground, on September 22 and October 9. (Det. by G. F. Ferris.)

October 21): The fern scale (Pinnaspis aspidistrae Sign.) is infesting and killing some potted African violet plants at Experiment. (Det. by H. S. McConnell.)

Indiana. J. J. Davis (October 22): The oystershell scale (Lepidosaphes ulmi L.) is destructively abundant on peony and myrtle in the southern half of the State.

AZALEA

AZALEA LEAF MINER (Gracilaria azaleella Brants)

Louisiana. E. M. Livingstone (October 15): Less abundant in New Orleans this season than in 1940.

AZALEA SCALE (Eriococcus azaleae Comst.)

Mississippi. C. Lyle (October 24): Specimens were recently received from Harrison and Lincoln Counties.

CHRYSANTHEMUM

COCKLEBUR BILLBUG (Rhodobaenus tredecimpunctatus Ill.)

Indiana. J. J. Davis (October 22): Reported as burrowing in the terminal bud shoots of chrysanthemums in a greenhouse at Bedford on August 20. Adult was reared on September 18.

DAHLIA

TARNISHED PLANT BUG (Lycus pratensis oblineatus Say)

Rhode Island. B. Eddy (October 6): Blasted dahlia buds in Pawtucket.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Const.)

Maryland. R. Norris (September 8): Present at Leonardtown. (Det. by G. S. Langford.)

Mississippi. C. Lile, et al. (October 24): Heavy infestations were reported on euonymus plants in the Meridian district and in Monroe County where some plants had been killed.

GLADIOLUS

GLADIOLUS THRIPS (Taeniothrips simplex Morison)

Georgia. T. L. Bissell (October 1): Scarce on late-flowering stalks in a large planting.

Tennessee. G. M. Bentley (October 20): Comparatively few found on gladioli with exception of a heavy infestation at Crossville, in Cumberland County, in a 40-acre field devoted to the growing of different varieties.

Utah. G. F. Knowlton (October 18): No severe damage generally in most northern gardens examined.

IRIS

IRIS BORER (Macronoctua onusta Grote)

Maine. A. F. Brower (September 15-30): Several moths were taken at light at Augusta.

JUNIPER

JUNIPER WEBWORM (Dichomeris marginellus F.)

Maryland. E. N. Cory (September 20): Very destructive in Montgomery County

MAGNOLIA

A SCALE (Toumeyella turgida Chll.)

Mississippi. C. Lyle (October 24): Specimens on magnolia were received from Harrison County on October 7.

OLEANDER

BLACK SCALE (Saissetia oleae Bern.)

South Carolina. G. A. Berly (September 26): Rather heavily infesting a few oleander plants in the Moultrieville area.

PYRACANTHA

LEAF CRUMPLER (Mincola indigenella Zell.)

Texas. R. K. Fletcher (October 21): Reported causing widespread injury to pyracantha, most reports being received from southeastern part of State. Reported from Port Arthur on October 1.

REDBUD

SOFT SCALE (Coccus hesperidum L.)

Virginia. C. E. Willey (October): Found for first time on redbud, in a nursery, in September.

SUNFLOWER

SUNFLOWER MAGGOT (Straussia longipennis Wied.)

Utah. G. F. Knowlton (September 30): Reported as destroying seeds in sunflower heads at Lohi.

TAXUS

A MEALYBUG (Pseudococcus cuspidatae Rau)

Michigan. R. Hutson (October 25): Specimen on Taxus was received from Detroit.

INSECTS ATTACKING MAN AND
DOMESTIC ANIMALS

MAN

MOSQUITOES (Culicinae)

Missouri. L. Hasenan (October 25): An undetermined common species has been abundant during the month throughout central Missouri, and is still attacking livestock and man.

North Dakota. H. S. Telford and C. Wester (October 23): Anopheles maculipennis Meig. present in great numbers a few miles south of Grand Forks. On September 20 this species, together with A. punctipennis Say, was found in buildings at Hillsboro.

Utah. G. F. Knowlton (October 13): Mosquitoes observed entering buildings at Salt Lake, Logan, and Ogden.

FLEAS (Siphonaptera)

Indiana. J. J. Davis (October 22): Reported as numerous around farm buildings.

Georgia. O. I. Sharp (October 20): Unusually abundant in Fort Valley, central Georgia.

BEDBUG (Cimex lectularius L.)

Nebraska. H. D. Tate (October 21): Reported from Saunders County on October 9.

Utah. G. F. Knowlton (October 15): Heavy outbreak is infesting a residence in Ogden.

FLIES (Diptera)

Texas. H. M. Brundrett (October 28): Phlebotomus sp. was especially annoying early in the summer and again in September. Reported as numerous and causing irritation, accompanied by violent itching and slight swelling.

Washington. E. F. Knipling (August 7): Symphoronyia sp. flies were rather numerous and inflicted a painful bite. Specimens were taken around Mirror Lake.

BROWN DOG TICK (Rhipicephalus sanguineus Latr.)

Kansas. E. R. Bryson (October 23): Reported twice from Kansas City.

Texas. H. M. Brundrett (October 28): One infestation was noted in which dogs were heavily covered with ticks of different sizes.

BLACK WIDOW SPIDER (Latrodectus mactans F.)

Indiana. J. J. Davis (October 22): Reported frequently from southern part of State.

Nebraska. H. D. Tate (October 21): Reported from Kearney, Polk, Buffalo, Herrick, and York Counties during the period from September 16 to October 20, inclusive.

Utah. G. F. Knowlton (October 22): Several reported as being collected at Logan and Salt Lake City.

CATTLE

SCREW-WORM (Cochliomyia americana C. & P.)

Indiana. J. J. Davis (October 22): Reported as more prevalent during the latter half of September than for the last 20 years. Conspicuous and destructive outbreaks reported from North Salem, New Harmony, Bringhurst, La Fayette, Anderson, Tipton, and Kokomo.

O. B. Riggs (October 27): Reported as causing severe damage during September and October to all kinds of livestock in Posey County, including horses, mules, cattle, hogs, sheep, and dogs, with greatest infestations on cattle.

F. C. Bishopp (October): Outbreak reported as having occurred in western end of Howard County.

Illinois. B. G. Berger (October 21): Many cases of infestation reported from south and east of Vermilion, in Edgar County, from the end of August until the first of October.

Mississippi. H. L. Douglass and F. A. Smith (October 24): Reported as very abundant in Tate, Panola, Grenada, and Yalobusha Counties with lighter infestations in De Soto, Lafayette, Marshall, Quitman, and Tunica Counties.

F. C. Bishopp (October 15 and 16): Reported as troublesome during the last 2 months in Hernando and Grenada.

Texas. W. C. Maxwell (October 25): Reported as very severe on cattle in Kleberg County on September 30.

HOUSE FLY (Haematobia irritans L.)

Texas. H. H. Brundrett (September): Reappeared about September 1 around Uvalde after being absent during midsummer and late summer. Average estimate was about 3,000 per animal.

COMMON CATTLE GRUB (Hypoderma lineatum DeVill.)

Texas. H. M. Brundrett (October 28): Noticed in small stages in backs of cattle at Uvalde during the latter part of September, averaging about 20 grubs per 100 cattle in 1 herd.

HORSE

HORSEFLIES (Tabanus spp.)

Texas. H. M. Brundrett and W. L. Barrett (October 28): One infestation of horseflies was noted. No unusual numbers observed.

F. C. Bishopp (October 28): Continued observations have not resulted in the finding of any oviposition by T. abactor Phil.

BOTFLIES (Gasterophilus spp.)

Missouri. L. Haseman (October 25): Common botfly has been observed depositing eggs on horses in central Missouri since early in October.

Texas. H. M. Brundrett (October 28): Adult botflies have been active during September around Uvalde and several horses were observed to be fairly well covered with eggs. Reported as annoying in some cases.

POULTRY

CHICKEN MITE (Dermanyssus gallinae Deg.)

Rhode Island. B. Eddy (October 7): Heavily infested chicken house in East Greenwich.

New York. F. C. Bishopp (October 14): Several specimens were submitted from an apartment house in New York City.

CHICKEN BODY LOUSE (Eponenacanthus stramineus Nitz.)

Rhode Island. B. Eddy (October 7): Heavily infested poultry houses in East Greenwich.

HOUSEHOLD AND STORED-PRODUCTS INSECTS

TERMITES (Isoptera)

Rhode Island. B. Eddy (October 6): Reticulitermes flavipes Koll. found infesting a building at Cranston.

Kansas. H. R. Bryson (October 23): Termites reported as present in Partridge, Chanute, Arkansas City, Lyndon, Phillipsburg, Meriden, Topeka, and Pretty Prairie.

California. P. Simmons (October 27): Winged forms of R. tibialis Banks emerging today in laboratory at Fresno, following a rain. Last emergence from same galleries was on December 16, 1940.

ANTS (Formicidae)

- New York. Anne McElroy (October 6): Specimens of Monomorium pharaonis L. were sent in on October 2 from Brooklyn. Reported as attacking various foods.
- Illinois. C. L. Metcalf (October 23): Crematogaster lineolata Say infested a residence at Decatur early in October.
- Mississippi. C. Lyle, et al. (October 24): Specimens of fire ants (Solenopsis xyloni McCook) were received from Harrison County on September 29, and specimens of M. pharaonis from Harrison and Lowndes Counties and from counties along the Gulf coast. Specimens of the Argentine ant (Iridomyrmex humilis Mayr) were received from Gloster in Anite County, which was not previously known to be infested; also reported as annoying in Pike and other counties in the southwestern part of the State.
- Louisiana. E. M. Livingstone (October 15): I. humilis was persistent in and around greenhouses during September.
- Nebraska. H. D. Tate (October 21): Specimens of C. lineolata were received from Otoe County on September 17.

BOXELDER BUG (Leptocoris trivittatus Say)

- Pennsylvania. E. J. Udine (October 6): Reported as numerous from Carlisle during the latter part of September and to date.
- New Jersey. W. E. Rogers (October 21): Heavy infestation noted around a house at Bound Brook.
- E. A. Soraci (October 24): Reported as abundant on boxelder around Trenton and in the southern half of the State.
- Delaware. L. A. Stearns (August 30): Reported as abundant in houses at Hockessin on August 30, and at Newark, Laurel, Middletown, and Delmar in October.
- E. P. Felt (October 22): Reported as abundant in Wilmington area.
- Maryland. C. Fuller (October 18): Boxelder trees at Cambridge rather heavily infested.
- Virginia. L. A. Hetrick (October 20): Specimens of nymphs and adults sent in, taken from an infested boxelder tree at Charlottesville.
- C. R. Willey (October): Very abundant over the State.
- Ohio. E. E. Parks (October 25): Reported as present on ash trees and boxelders and as entering houses.
- E. W. Mendenhall (October 21): Nuisance in lawn and about a house at Portsmouth.

Indiana. J. J. Davis (October 22): Reported as annoying from every section of the State.

Illinois. C. L. Metcalf (October 23): Reported on October 15 as annoying about dwellings in McHenry and Grundy Counties, in northeastern Illinois.

Michigan. R. Hutson (October 25): Reported as infesting houses and lawns at Ypsilanti, Grand Rapids, Wyandotte, Jackson, and Vassar.

Missouri. W. R. Eans (October 25): Reported as unusually abundant throughout central Missouri and from other parts of the State, and moving from boxelder into their winter quarters.

Nebraska. E. D. Tate (October 21): Reported numerous times from Boone, Burt, Cherry, Fillmore, Franklin, Frontier, Gage, Johnson, and Pawnee Counties. Reports and observations indicate that it is more numerous in the eastern part of State than at any time in recent years.

Kansas. H. R. Bryson (October 24): More abundant than for the last 5 or 6 years. Reported as abundant from Norton, Concordia, and Manhattan.

Utah. G. F. Knowlton (October 2): Becoming more annoying in houses in northern Utah.

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus L.)

Michigan. R. Hutson (October 25): Reported as infesting houses in Alma, Manistee, and Detroit.

Alaska. A. Rasmussen (September 29): Reported as very numerous in newly built house at Skagway, which was unoccupied for 6 weeks during the summer. (Det. by L. L. Buchanan.)

A CLOTHES MOTH (Tineola walsinghami Busck)

Florida. Mrs. L. S. Churchill (October 30): Present in house at Dade City and feeding on carpets, rugs, and clothing. (Det. by C. Heinrich.)

Mississippi. C. Lyle, et al. (October 24): Specimens received from Jones and Harrison Counties (det. by C. Heinrich) and from Woodland, in Chickasaw County.

POWDER-POST BEETLES (Lyctidae)

Maine. A. E. Brower (October 13): Heavy infestation examined in hand-hewn beams supporting an old house in Vassalboro. Other infestations have been reported.

BROWN-BANDED COCKROACH (Supella supellectilium Serv.)

Minnesota. C. E. Mickel (October 21): First report for the State received from Lester Prairie.

GERMAN COCKROACH (Blattella germanica L.)

Mississippi. C. Lyle, et al. (October 24): Specimens received from Neshoba County on September 24. Reported as annoying in kitchen.

Nebraska. H. D. Tate (October 21): Specimens received from Clay and Richardson Counties.

BOOKLOUSE (Liposcelis divinatorius Mull.)

Illinois. C. L. Metcalf (October 23): Infested a residence in Shelby County early in September.

Michigan. Mrs. Harry Mocksey (September 26): Reported as present in stored boxes, on wallpaper, and in some books at Detroit.

HOUSE CENTIPEDE (Scutigera forcans Raf.)

Nebraska. H. D. Tate (October 21): Specimens submitted from Frontier and Douglas Counties, with report that they were present in considerable numbers in basements.

A GREYBOTTLE FLY (Lucilia sericata Meig.)

Oregon. D. C. Mote (October 8): Specimens of flies reared from larvae found in can of corned beef purchased from a store in Portland. (Det. by D. G. Hall.)

CARPET BEETLES (Anthrenus spp.)

Illinois. C. L. Metcalf (October 23): Numerous full-grown larvae of A. verbasci L. reported as present in residences at Peoria, Pekin, Watsoka, and La Salle.

Nebraska. H. D. Tate (October 21): A. scrophulariae L. reported from Douglas County on September 30 as doing damage to woollen clothing.

ALMOND MOTM (Ephestia cautella Walk.)

Michigan. R. Hutson (October 25): Larval forms very numerous around dairy barns in the vicinity of Hillsdale. (Det. by C. Heinrich.)

DRUG STORE WEEVIL (Stegobium paniceum L.)

Rhode Island. B. Eddy (October 2): Found in a package of soup mix in Riverside.

STORED GRAIN INSECTS

Rhode Island. B. Eddy (October 14): Saw-toothed grain beetle (Oryzaephilus surinamensis L.) infested breakfast food at Providence.

- Delaware. J. M. Anos (October 23): Rather heavy infestation of angoumois grain moth (Sitotroga cerealella Oliv.) in unshucked corn and corn standing in the shock in Sussex County. Varieties having ears with exposed tips are more severely infested than those having shucks covering the ear. Most of the ears are clean or have only 1 to 3 infested grains, but many ears have as many as 50 grains containing larvae, pupae, or exit holes.
- Virginia. H. G. Walker (October 24): S. cerealella unusually abundant in many fields of corn at harvesttime in the Norfolk area.
- Georgia. O. I. Snapp (October 23): S. cerealella and O. surinamensis are attacking stored oats at Fort Valley, in central Georgia.
- Tennessee. G. M. Bentley (October 7): Two rather heavy infestations of wheat by the Indian-meal moth (Plodia interpunctella Hbn.) occurred in mills at Knoxville and Morristown. Very heavy infestation of rice weevil (Sitophilus oryza L.) in warehouse at Morristown, in Hamblen County.
- Mississippi. C. Lyle (October 24): S. oryza reported from Copiah and Perry Counties.
- North Dakota. F. S. Telford and C. Wester (September 29): Lachesilla pedicularia L. was numerous in barley from a granary at Walcott. (October 23): Dried brunes packed in wooden boxes in a warehouse in Fargo were found on October 2 to contain severe larval infestations of P. interpunctella Hbn. Larvae were heavily parasitized.
- Nebraska. H. D. Tate (October 21): Specimens of O. surinamensis were submitted, with reports that they were damaging grain products in a store-room in Madison County and were found in barley in Butler County. Tenebrio molitor L. was found to be infesting oats in Butler County. Specimens of Tribolium castaneum Hbst. were submitted, with report that they were infesting oats in Butler County and causing damage in a feed store in Richardson County. Barley samples submitted from Hayes County were found to be infested with P. interpunctella and the cadelle (Tenebroides mauritanicus L.).

CIGARETTE BEETLE (Lasioderma serricorne F.)

- Illinois. C. L. Metcalf (October 23): Serious infestations were found in house at Urbana, in Champaign County, and at Deerfield, in Lake County, in mid-October.
- Mississippi. T. F. McGehee (October 24): Adults were collected in damaged furniture in a house in Harrison County.
- Nebraska. H. D. Tate (October 21): Specimens received from Douglas and Platte Counties on October 6 and 9, respectively. Reported as infesting davenport in Platte County.

STATUS OF THE EUROPEAN CORN BORER IN 1941

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Distribution

In 1941 considerable spread of the European corn borer was recorded west and southwest of previously infested areas in Wisconsin, Illinois, and Indiana, and toward the southeast in Pennsylvania, Maryland, Virginia, and North Carolina, increasing the known distribution of the insect in the Northeastern States by 77 counties. In Wisconsin the corn borer was discovered in 7 new counties, and the infestation extended westward to cover practically half of the State. The insect was present in 26 new counties of Illinois, bringing almost half of that State within the known infested area and carrying the infestation west through some of the northern counties to the Mississippi River and southward along the eastern border of the State for a considerable distance down the Wabash River. The pest was found for the first time in 15 additional counties

^{1/} The data presented in this report were accumulated by the Bureau of Entomology and Plant Quarantine and by various agencies in the States infested by the European corn borer (*Pyrausta nubilalis* Hbn.), and were assembled and tabulated at the laboratory for European corn borer research, at Toledo, Ohio, with W. A. Baker in charge. In addition to activity by the Bureau, the survey in 1941 was conducted in 62 counties of Indiana by the Indiana State Conservation Department; in 14 counties of Maine, in 17 counties of New Jersey, and in 12 counties of Vermont, by the State departments of agriculture of those States; in 12 counties of eastern New York, including Long Island, by the New York Agricultural Experiment Station at Geneva and the New York State Department of Agriculture, cooperating; and in 7 counties of New Hampshire, in 5 counties of Maryland, and in half of the 3 counties of Delaware, by the agricultural experiment stations of those States. New county records of the European corn borer in 1941 were contributed by the Natural History Survey and the State department of agriculture of Illinois; by the State conservation department of Indiana; by the State departments of agriculture of North Carolina, Virginia, and Wisconsin; by the Maryland Agricultural Experiment Station; and by the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture. The Bureau appreciates the interest and cooperation of all States in which the survey was conducted and from which new records of distribution were obtained in 1941.

in western Indiana, filling in a large area between the group of counties previously known to be infested in that State and the infested part of eastern Illinois, and establishing about two-thirds of Indiana as now infested. Several newly infested counties were recorded in southeastern Pennsylvania in 1941, leaving only 2 counties in that State in which the borer has not yet been found. In Maryland 11 new counties were found infested, including the remainder of the Eastern Shore, thus extending the known infestation the length of the State from Pennsylvania south to Virginia. First records were obtained in 9 counties of eastern Virginia, the infestation appearing in all counties along the Potomac River and in several others adjoining the older infested section of the State nearer the coast. The European corn borer was also first recorded in Washington, D. C., in 1941, and in 1 county of North Carolina on the south shore of Albemarle Sound.

The following list gives the counties of infested States in which the European corn borer was found for the first time in 1941:

Illinois: Boone, Bureau, Carroll, Christian, Clark, Coles, Crawford, Cumberland, De Witt, Douglas, Edgar, La Salle, Lawrence, Lee, Logan, Macon, Marshall, Moultrie, Ogle, Peoria, Piatt, Putnam, Shelby, Stephenson, Tazewell and Woodford.

Indiana: Bartholomew, Benton, Clay, Fountain, Hendricks, Montgomery, Morgan, Newton, Owen, Parke, Putnam, Vermillion, Vigo, Warren, White, and Jefferson.

Maryland: Baltimore, Caroline, Carroll, Cecil, Charles, Dorchester, Howard, Kent, Prince Georges, Queen Annes, and Talbot.

North Carolina: Tyrrell.

Pennsylvania: Adams, Cumberland, Dauphin, Lebanon, Perry, Schuylkill, and York.

Virginia: Charles City, Fairfax, Henrico, King George, Loudoun, Prince William, Stafford, Surry, and Warwick.

Washington, D. C.

Wisconsin: Dane, Green, Langlade, Marathon, Marquette, Rock, and Sauk.

Fall Abundance

The relative abundance of the European corn borer in corn in the fall of 1941 was determined for a considerable portion of the infested area. In all, 3,474 cornfields were examined in 258 counties of 18 infested States, approximately half of the counties being surveyed by the Bureau and the remainder by the State agencies. In each of 3 States, 2 small counties were combined and each pair was treated as a survey unit, and in 1 State 3 groups of 4 small counties each were handled in this way. Except in Delaware, Indiana and Maine, the survey procedure in 1941 followed that in general use by the Bureau during the last 2 years. By this method, 10 cornfields at random were sampled within each county, the count of infestation being obtained by

examining 25 consecutive corn plants taken at a given distance within a field from near the mid point of its most accessible edge, and the number of borers per infested plant being determined by dissecting the first 2 plants found infested. The procedure in Delaware was changed to the extent of doubling the number of fields examined per county. In Maine an average of 20 to 25 fields was surveyed in each county and in Indiana an average of about 20 fields was examined, the exact quota per county in the latter State varying somewhat with the number of townships within a unit. The population figure for each field in the Maine and Indiana surveys was based on an examination of 100 plants and the dissection of 5 infested plants. In either survey procedure the product of the percentage of plant infestation in a field and the average number of borers per infested plant provided a figure designated as the average number of borers per 100 plants. The population data derived in this way for the individual fields were then grouped in the calculation of county averages.

A summary of the data on corn borer abundance in corn for all counties and States surveyed in 1941 is presented in table 1, in which the data obtained from the 1940 survey are also given for comparison. In table 2 the average numbers of borers per 100 plants are given for each county surveyed in 1941 and all possible comparisons are made with similar data from 1940. Both States and counties are arranged alphabetically in the presentation of the data. In reading the tabulated data it should be noted that a zero recorded for any county indicates a population so low that no infested plants occurred within the specified counts and does not necessarily mean the complete absence of the borer. On the accompanying map shaded areas indicate the relative abundance of the European corn borer in corn in that part of the infested area surveyed in 1941. The known distribution of the insect on a county basis, including the 1941 spread, is also shown on the map and includes nearly all of the area to the north and east of the dotted line. A brief discussion of the 1941 survey follows.

Significant increases in abundance of the European corn borer in 1941 from that of 1940 appeared in several counties of central New Jersey, in a considerable area in western and southwestern Indiana, and in northwestern Illinois. Although comparable data of other years are not available for a large number of counties surveyed in western Indiana in 1941, many of which had not been recorded previously as infested, the relative abundance of the corn borer found in that section in 1941 and the comparative ease with which specimens of the insect could be collected in newly infested counties in both Indiana and Illinois offers substantial evidence that populations of the insect are building up over a wide front in this part of the Corn Belt. A similar condition apparently prevailed in Wisconsin where appreciable westward dispersion was recorded in 1941, and limited survey data indicated that populations of the borer were at about the same level in 1941 as in 1940.

The year 1941 was largely characterized, however, by a general decrease in corn borer abundance from that of 1940 in a large part of the infested area surveyed in both years, the average number of borers per 100 plants in 180 counties being reduced from 154.7 in 1940 to 61.8 in 1941, or approximately 60 percent. The decrease in 1941 was evidently more widespread than any previously recorded and was particularly apparent in sections of the New England States, where the reduction from 1940 was around 75 percent, and in

New York, Maryland, Virginia, and Michigan, where borer populations were about 85 percent lower in 1941 than in 1940. Reductions of the insect from 1940 to 1941 in comparable sections of Ohio and Indiana averaged only a little over 40 percent, and in more than half of the 60 comparable counties surveyed in the older infested parts of these States, in the 2 years considered, there was either no significant change in abundance of the borer or a definite increase in 1941. In a number of counties in northwestern Ohio the relatively high infestation of 1940 continued in 1941, with accompanying commercial damage. At the same time, it should be noted that the decrease in Ohio, Indiana, and Michigan in 1941 did not carry populations of the corn borer nearly to as low levels as in 1930 and 1934, when drought caused appreciable reductions of the insect in these States. For example, in 17 comparable counties of Michigan and Ohio just westward of Lake Erie the average number of borers per 100 plants declined to 18.0 in 1930 and to 16.3 in 1934, whereas following the decrease in 1941 the average number of larvae per 100 plants in this section was 121.1, a figure practically as high as any determined in the previous 14 years on record, except that for 1940.

Concentrations of the corn borer were most pronounced in the fall of 1941 in northwestern Ohio, where each of 15 counties averaged 100 or more larvae per 100 plants. Populations of this size were found also in 8 counties in New Jersey, 3 in southeastern Pennsylvania, 3 in Connecticut, 1 in Rhode Island, 1 on Long Island, N. Y., 1 in Maryland, 3 in Indiana, and 3 in Michigan. The highest infestations per county in 1941 occurred in Mercer and Middlesex Counties, N. J., which averaged 610.6 and 457.8 borers per 100 plants, respectively, and in Paulding, Logan, and Van Wert Counties, Ohio, in which the respective numbers of borers per 100 plants were 442.4, 316.6, and 307.6.

Wisconsin and Illinois.--Infestation by the European corn borer in 1941 was relatively light in 8 counties along the eastern edge of Wisconsin, where it averaged 13.1 borers per 100 plants, and no significant change in the status of the insect from 1940 to 1941 appeared in the 2 comparable counties of Ozaukee and Washington. The highest populations in Wisconsin in 1941 were 47.8, 24.4, and 20.4 borers per 100 plants and were observed in Sheboygan, Manitowoc, and Ozaukee Counties, respectively. In 1941 measurable numbers of the borer were found in all of the 5 counties of Illinois which were surveyed with negative results in 1940 and in 3 of 4 additional counties inspected in 1941 only. The average for the 9 Illinois counties surveyed in 1941 was 5.2 borers per 100 plants, with a maximum of 20.2 larvae per 100 plants in Vermilion County.

Indiana.--Within the section comprising 35 comparable counties in Indiana, where the corn borer had increased steadily in abundance from 1938 to 1940, there occurred a significant decrease from 77.4 borers per 100 plants in 1940 to 45.6 in 1941. Reduction in numbers of the insect was most noticeable in 13 counties in the northeastern corner of the State, where the average of 169.5 borers per 100 plants in 1940 declined to 46.6 in 1941. To the west and southwest of this section a tier of 9 counties was infested to about the same extent in 1940 and 1941, with an average of 25.5 borers per 100 plants in the former and 25.9 in the latter year. The remaining 13 comparable counties farther to the west and southwest showed significant increase in borer abundance from 21.3 in 1940 to 58.3 in 1941, and in 27 other counties, 16 of which were first found infested in 1941, there probably were more borer

present than at any previous time. The 3 high counties in the State in 1941, Tipton, Blackford, and Carroll, had borer populations per 100 plants of 134.3, 128.4, and 109.4, respectively. Carroll County was one of the group in the western part of the State which had not been surveyed before, although known to have been infested for a number of years.

Ohio.--Twenty-five comparable counties representing the northwestern quarter of Ohio, taken as a whole, showed a significant decrease in corn borer abundance from 266.9 larvae per 100 plants in 1940 to 156.8 in 1941. Nevertheless, the populations in some of these counties were among the highest observed in the country in 1941. Fifteen, or three-fifths, of the counties in this section had more than 100 borers per 100 plants and 10, or two-fifths of them, averaged over 200 larvae per 100 plants. Maximum infestation of over 300 borers per 100 plants occurred in the 3 counties of Paulding, Logan, and Van Wert, with 442.4, 316.6, and 307.6 borers per 100 plants, respectively. Borer reductions from 1940 to 1941 were significant in 8 of the Ohio counties, and in a number of the other comparable counties of the State the general trend in abundance of the insect was downward for these 2 successive years. A relatively light infestation--2.3 borers per 100 plants--was found in 16 counties in the south-central part of Ohio surveyed for the first time in 1941.

Michigan.--Abundance of the corn borer in 13 comparable counties of southeastern Michigan declined from 323 borers per 100 plants in 1940 to 54.3 in 1941, some of the most pronounced decreases occurring in the northern part of the "thumb" section, where high populations of the insect have been prevalent during the last few years. The 3 high counties in the State were Huron, Saginaw, and Lenawee, averaging 137.6, 110.6, and 102 borers per 100 plants, respectively, in 1941.

New York.--Decreases in numbers of the borer from 1940 to 1941 were common to surveyed areas in both western and eastern New York. In the 4 counties of Niagara, Orleans, Monroe, and Wayne, lying along the southern shore of Lake Ontario in western New York, the average number of borers per 100 plants changed from 510.2 in 1940 to 56.5 in 1941, and in the 12 counties surveyed in the Hudson River Valley and on Long Island in the eastern part of the State the reduction over the same 2-year period was from 168.3 to 35.0 borers per 100 plants. Nassau County, at the western end of Long Island, had the most borers--257.2 per 100 plants--of any of the New York counties surveyed in 1941.

New England.--Throughout the New England States the corn borer decreased in abundance from 1940 to 1941, and in 1941 in sections of Connecticut, Massachusetts, and Rhode Island, where high infestations had become chronic, some of the lowest populations known in these States for many years occurred. The average number of borers per 100 plants in the 6 States declined from 101.7 in 1940 to 24.4 in 1941. The infestation in Maine was again light--1.5 borers per 100 plants in 1941, as compared with 2.2 in 1940. In New Hampshire and Vermont the 1940-41 decreases in borers per 100 plants were, respectively, from 34.0 to 5.3 and from 39.6 to 16.6. Within the 7 counties of Massachusetts included in the current survey, borer populations declined from 119.4 larvae per 100 plants in 1940 to 23.4 in 1941, and in Connecticut and Rhode Island, respectively, the averages of 81.9 and 57.6 larvae per 100 plants in 1941

represented reductions from 348.4 and 264.6 borers per 100 plants in 1940. Only 4 counties in New England had infestations in 1941 averaging over 100 borers per 100 plants. These counties and their respective populations expressed in number of borers per 100 plants were: Hartford, 235.8; New Haven, 143.4; and Fairfield, 121.8 in Connecticut; and Bristol-Newport, 163.4 in Rhode Island.

New Jersey.--No significant change in corn borer abundance from 1940 to 1941 was shown for New Jersey as a whole, the average number of borers per 100 plants being 109 in 1940 and 126.9 in 1941. Populations were higher in 1941 than in 1940 in Hunterdon, Somerset, Mercer, and Middlesex Counties in the central part of the State and trends toward increase were apparent in several other counties. On the other hand, about half of the counties in New Jersey tended to have lower numbers of the borer in 1941 than in 1940. The highest county infestations found in the United States in 1941 were in Mercer and Middlesex Counties, where the number of borers per 100 plants averaged 610.6 and 457.8, respectively. Six other counties in the State had populations in 1941 ranging from 100 to 250 borers per 100 plants.

Pennsylvania.--Bucks County, the only county in Pennsylvania surveyed in both 1940 and 1941, had the same infestation of 117.0 borers per 100 plants each year. Five additional counties in the southeastern corner of the State were included in the 1941 survey and 2 of these--Montgomery and Delaware--averaged 130.8 and 129.8 borers per 100 plants, respectively. The average for all 6 Pennsylvania counties surveyed in 1941 was 75.7 larvae per 100 plants.

Delaware, Maryland, and Virginia.--Except for a downward trend in the southern part of the State, populations of the corn borer in Delaware remained at about the same level in 1941 as in 1940, with the State average at 53.2 borers per 100 plants in 1940 and 40.1 in 1941. Reduced abundance of the borer from 1940 to 1941 was apparent in 2 Maryland and 2 Virginia counties at the lower end of the Eastern Shore, and in 2 other comparable counties on the Virginia mainland. In the comparable Maryland counties of Somerset, Wicomico, and Worcester, the average of 235.3 borers per 100 plants in 1940 dropped to 42.5 in 1941, while the 1940-41 decrease in the 4 comparable Virginia counties of Accomac, Norfolk, Northampton, and Princess Anne was from 408.6 to 30.1 borers per 100 plants. Cornfields with exceptionally high borer infestation did not occur in this region in 1941, as they did in 1940. Ten additional counties in Maryland surveyed in 1941 for the first time averaged 30.5 borers per 100 plants and 1 of these counties--Talbot--had 100 larvae per 100 plants. Infestation was relatively light in 2 counties and in 3 groups of 4 small counties each on the Virginia mainland added to the survey in 1941, with an average of 14 borers per 100 plants.

North Carolina.--The 3 infested counties in the northeastern corner of North Carolina were included in the survey in 1941 and an average of 11.3 borers per 100 plants found for the section.

Summer Abundance in Sweet Corn

Surveys of infestation by the European corn borer in early market sweet corn were conducted in the summer of 1941 in various counties of Connecticut, Maine, Massachusetts, Michigan, New Jersey, New York, Ohio, and Vermont and in sweet corn grown for canning purposes in Maine and Vermont, by the Bureau and several of the interested States.^{2/} As a rule, the fields surveyed represented the most heavily infested ones within a given locality. In each field 100 plants were examined for percentage of plant infestation and 10 infested plants dissected, whenever possible, to learn the average number of borers per infested plant, the product of the 2 figures giving the average number of borers per 100 plants. The 1941 data on early market sweet corn and comparisons with data for 1940 are presented in table 3.

Early market sweet corn in Burlington County, N. J., and in Lucas County, Ohio, was more heavily infested by the European corn borer in 1941 than in 1940. In the former county, an average of 894 borers per 100 plants in 1941, as compared with 510 in 1940, and in the latter county a population of 1,235 larvae per 100 plants in 1941, was a significant increase from 497 in 1940. Five fields of sweet corn in Monroe County, Mich., averaged 1,067 borers per 100 plants in the summer of 1941. The insect was much less abundant, however, in early market sweet corn in New Haven County, Conn., based on a comparison of 109 borers per 100 plants found in 1941 and 493 in 1940. The corn borer was also at a low level of abundance in 1941 in Middlesex County, Mass., Windham County, Vt., and in the several counties surveyed in Maine. In the 4 counties of Monroe, Niagara, Orleans, and Wayne, in western New York, the borer was rather abundant in 1941, whereas in surveyed sections in the eastern part of New York State populations of the pest were considerably lower in 1941 than in 1940.

Infestation by the corn borer was not especially high in sweet corn for canning in 1941 in Vermont and Maine, according to surveys conducted in these States. The average number of borers per 100 plants in 40 of the most heavily infested fields of canning corn surveyed in northern Vermont was 39.2, the 4 fields with the highest populations averaging 224, 144, 110, and 108 borers per 100 plants. In Maine the population in canning corn determined for 10 counties in which the survey was made averaged 1.5 borers per 100 plants, with a county maximum of 3.3 borers and a county minimum of 0.2 borer per 100 plants.

Abundance and Weather

Past studies and observations concerned with the ecology of the European corn borer support an emphasis on weather as the principal influence acting on populations of the insect, and drought during the active season of the borer particularly has been found unfavorable to survival and increased abundance. Therefore, the most logical explanation of the widespread decrease in numbers of the corn borer in northeastern United States in 1941 is to be found in the drought, which was so general in that part of the country and which affected to some extent all of the infested States at certain periods of the spring and summer. On the other hand, the more favorable relationship

^{2/} The data on infestation in market sweet corn in New York were furnished by the Agricultural Experiment Station, Geneva, N. Y., and those for both market and canning sweet corn in Maine were supplied by the Maine State Department of Agriculture.

which presumably existed between the corn borer and its environment in several sections of the infested area in 1941 in which the insect increased in abundance from 1940, or where populations remained relatively stable for the 2 years, is not apparent in the broad generalizations on weather possible at this time. According to the Weather Bureau, precipitation was very scanty during the late winter and spring months of 1941 in the Eastern States; the spring (March, April, and May) being the driest on record in Ohio and several other States, and the second driest in Indiana, Virginia, Pennsylvania, New York, and New England. Although rainfall in June was heavy in many sections of the area where May had been extremely dry, the New England group of States, New York, Michigan, and Wisconsin, were among the States which had less than normal precipitation in that month. Above-normal rainfall in July did not occur in Indiana, Illinois, Michigan, and Wisconsin, as in the other States east of the Mississippi River. A number of the Eastern States had rainfall below normal in either August or September, or in both months, and by the first of October another drought period in the East had assumed serious and widespread proportions.

Table 1.--Data on European corn borer abundance in corn, fall of 1941, and comparisons with data for 1940, summary by States

State	1941		Comparable counties	Average borers per 100 plants	
	Counties	Average borers per 100 plants		1940	1941
	Number	Number	Number	Number	Number
Connecticut	8	81.9	8	348.4	81.9
Delaware	3	40.1	3	53.2	40.1
Illinois	9	5.2	5	0	4.2
Indiana	62	34.9	35	77.4	45.6
Maine	14	1.5	14	2.2	1.5
Maryland	13	33.3	3	235.3	42.5
Massachusetts ...	7	23.4	7	119.4	23.4
Michigan	13	54.3	13	323.0	54.3
New Hampshire ...	9	5.3	9	34.0	5.3
New Jersey	19	126.9	19	109.0	126.9
New York	16	40.4	16	253.8	40.4
North Carolina ..	3	11.3	0	-	-
Ohio	41	96.5	25	266.9	156.8
Pennsylvania	6	75.7	1	117.0	117.0
Rhode Island	4	57.6	4	264.6	57.6
Vermont	14	14.6	12	39.6	16.6
Virginia	9	21.1	4	408.6	30.1
Wisconsin	8	13.1	2	13.3	13.0
Total	258	---	180	---	---
Areal average.	---	48.8	---	154.7	61.8

Table 2.--Data on European corn borer abundance in corn, fall of 1941, and comparisons with data for 1940

State and county	Average borers per 100 plants			State and county	Average borers per 100 plants	
	1940	1941			1940	1941
	Number	Number			Number	Number
Connecticut:				Indiana:		
Fairfield.....	539.6	121.8		Adams	246.4	34.0
Hartford.....	448.4	235.8		Allen	234.5	71.0
Litchfield ..	213.8	9.6		Bartholomew ..	-	5.8
Middlesex	472.2	63.6		Benton	-	13.6
New Haven	393.4	143.4		Blackford	263.8	128.4
New London ..	256.8	28.2		Boone	-	26.3
Tolland	277.6	41.6		Carroll	-	109.4
Windham	185.6	11.0		Cass	-	72.6
Average:				Clay	-	1.1
8 counties	348.4	81.9		Clinton	-	45.0
				Decatur	-	11.4
				De Kalb	187.0	32.8
				Delaware	43.6	69.0
Delaware:				Elkhart	8.2	13.2
Kent	29.8	28.3		Fayette	16.5	61.6
New Castle ..	25.2	26.7		Fountain	-	14.4
Sussex	104.7	65.4		Franklin	-	55.2
Average:				Fulton	17.3	19.5
3 counties	53.2	40.1		Grant	75.5	74.6
				Hamilton	10.6	42.3
				Hancock	10.5	53.2
				Hendricks	-	15.7
Illinois				Henry	20.6	63.2
Champaign	-	4.2		Howard	35.3	90.0
Cook	0	1.6		Huntington ..	173.1	58.4
De Kalb	-	0.8		Jasper	-	8.3
Du Page	0	5.6		Jay	252.6	59.7
Kankakee	0	3.2		Johnson	-	20.0
Lake	0	7.2		Kosciusko	44.4	11.4
McLean	-	0		Lagrange	28.5	4.9
Vermilion	-	20.2		Lake	-	4.0
Will	0	3.6		La Porte.....	1.4	1.6
Average:				Madison	38.7	98.3
5 counties	0	4.2		Marion	-	52.3
9 counties	-	5.2		Marshall	17.5	23.7
				Miami	21.2	23.8
				Montgomery ..	-	8.9
				Morgan	-	4.1

Table 2.—Data on European corn borer abundance in corn, fall of 1941, and comparisons with data for 1940—Continued

State and county	Average borers per 100 plants			State and county	Average borers per 100 plants	
	1940	1941			1940	1941
	Number	Number			Number	Number
Indiana (Cont'd):				Maryland:		
Newton	—	4.4		Baltimore ...	—	24.2
Noble	82.9	29.9		Caroline ...	—	52.4
Owen	—	0.5		Carroll ...	—	1.2
Parke	—	1.6		Cecil	—	10.9
Porter	0.4	3.1		Charles ...	—	0
Pulaski	—	7.4		Dorchester ..	—	22.4
Putnam	—	1.7		Harford ...	—	35.1
Randolph	30.9	37.5		Kent	—	50.2
Rush	21.0	47.5		Queen Annes..	—	8.8
St. Joseph ...	3.8	3.8		Somerset ...	401.5	15.8
Shelby	11.4	22.7		Talbot	—	100.0
Starke	0.6	20.1		Wicomico ...	45.4	61.2
Steuben	155.8	46.4		Worcester ...	259.1	50.4
Tippecanoe ...	—	16.1				
Tipton	57.9	134.3		Average:		
Union	9.2	52.5		3 counties:	235.3	42.5
Vermillion ...	—	0.8		13 counties:	—	33.3
Vigo	—	1.3				
Wabash	53.8	35.4		Massachusetts:		
Warren	—	22.2		Essex	137.8	21.0
Wayne	101.7	50.2		Franklin ...	89.0	3.8
Wells	343.6	53.4		Hampden ...	130.6	21.8
White	—	40.6		Hampshire ...	65.2	26.4
Whitley	89.0	25.3		Middlesex ...	220.2	16.4
				Norfolk ...	106.2	67.2
Average:				Worcester ...	86.8	7.2
35 counties:	77.4	45.6				
62 counties:	—	34.9		Average:		
				7 counties:	119.4	23.4
Maine:				Michigan:		
Androscoggin..	0.5	0.4		Genesee	399.6	3.4
Cumberland ...	2.9	5.0		Gratiot	516.2	93.0
Franklin	1.6	1.0		Huron	352.6	137.6
Hancock	0	.2		Lapeer	288.2	7.8
Kennebec .....	.1	5.5		Lenawee	130.0	102.0
Knox .....	.9	.1		Maconb	473.4	22.4
Lincoln .....	.7	2.0		Monroe	166.4	93.2
Oxford .....	.1	.5		Oakland	171.8	10.4
Penobscot ...	.5	.5		Saginaw	369.4	110.6
Piscataquis ...	1.3	0		St. Clair ...	283.2	45.8
Sagadahoc	1.5	2.0		Sanilac	512.0	15.8
Somerset	2.8	.8		Tuscola	404.2	34.4
Waldo .....	.5	.3		Wayne	132.6	29.2
York	17.1	2.2				
Average:				Average:		
14 counties:	2.2	1.5		13 counties:	323.0	54.3

Table 2.—Data on European corn borer abundance in corn, fall of 1941, and comparisons with data for 1940—Continued

State and county	Average borers per 100 plants			State and county	Average borers per 100 plants	
	1940	1941			1940	1941
	Number	Number			Number	Number
<u>New Hampshire:</u>				<u>New York:</u>		
Belknap	3.4	4.2		Albany	14.8	3.6
Carroll	13.6	6.6		Columbia	521.3	3.8
Cheshire	56.6	5.2		Dutchess	82.2	2.0
Grafton	13.2	2.0		Greene	83.4	3.0
Hillsboro	24.4	1.6		Monroe	297.3	20.6
Merrimack	9.0	3.2		Nassau	742.2	257.2
Rockingham	54.0	4.3		Niagara	709.6	91.2
Strafford	10.0	2.4		Orange	20.2	0.4
Sullivan	122.2	18.0		Orleans	577.2	96.0
Average:				Putnam-West-		
9 counties --	34.0	5.3		chester	116.0	70.6
				Rensselaer ..	54.4	6.2
				Saratoga	11.3	1.2
				Schenectady..	3.2	0.4
<u>New Jersey:</u>				Suffolk	243.8	64.8
Atlantic.....	9.6	72.8		Ulster	121.2	2.0
Bergen	234.0	108.8		Wayne	456.0	18.0
Burlington	505.4	235.6				
Camden	93.8	121.8		Average:		
Cape May	36.2	22.2		16 counties:	253.8	40.4
Cumberland	58.6	31.0				
Essex-Union	106.2	101.4				
Gloucester	101.4	32.0		<u>North Carolina:</u>		
Hunterdon	3.0	46.2		Camden	-	17.4
Mercer	137.2	610.6		Currituck ...	-	4.8
Middlesex	105.0	457.8		Pasquotank ..	-	11.6
Monmouth	337.4	167.6				
Morris	53.6	36.0		Average:		
Ocean	34.3	94.9		3 counties:	-	11.3
Passaic	46.6	61.4				
Salem	53.0	111.2				
Somerset	4.0	33.0				
Sussex	4.6	2.8				
Warren	31.3	13.4				
Average:						
19 counties	109.0	126.9				

Table 2.—Data on European corn borer abundance in corn, fall of 1941, and comparisons with data for 1940—Continued

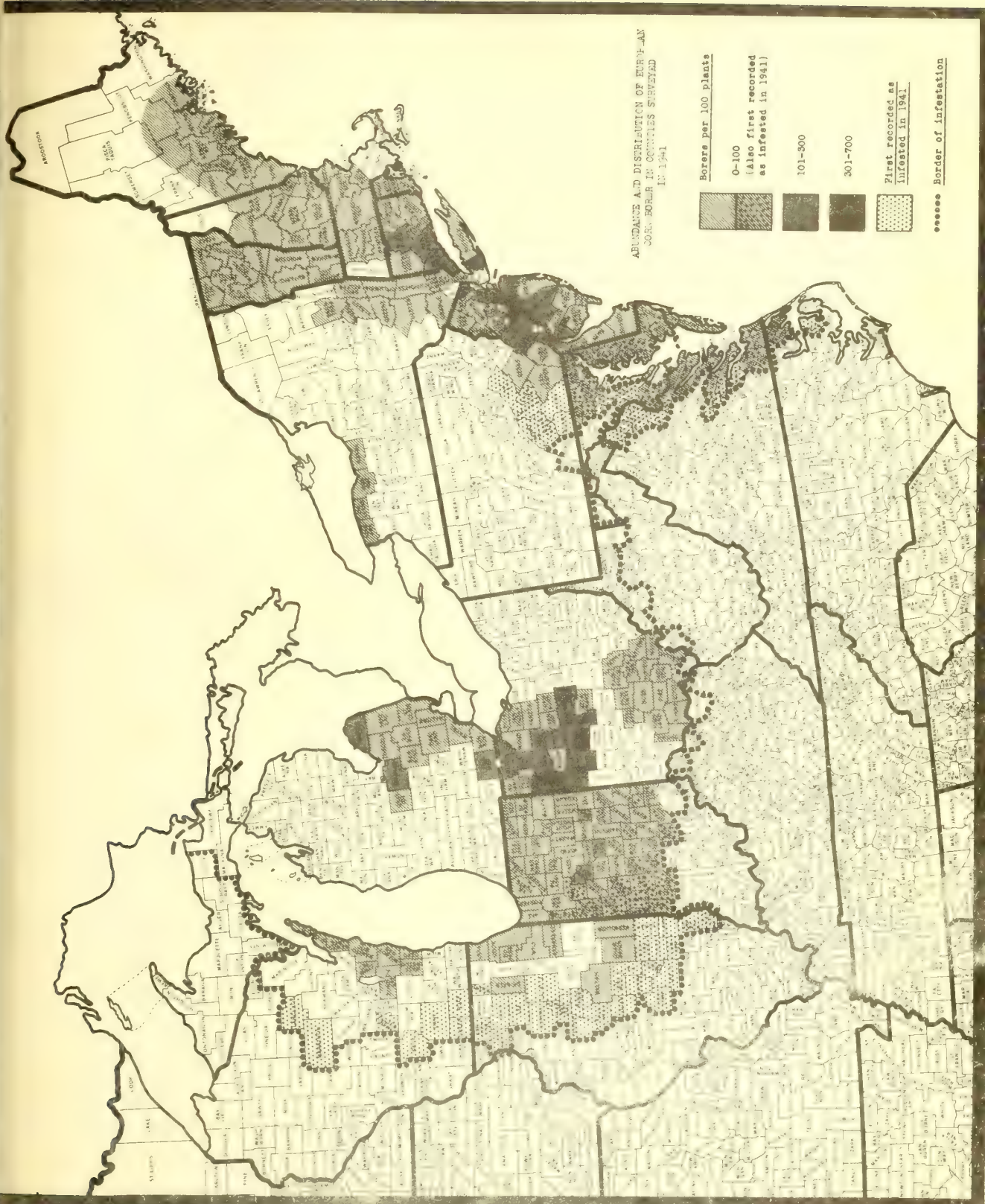
State and county	Average borers per 100 plants		State and county	Average borers per 100 plants	
	1940	1941		1940	1941
	Number	Number		Number	Number
Ohio:			Pennsylvania:		
Adams	-	1.6	Berks	-	22.
Allen	273.4	73.6	Bucks	117.0	117.
Athens	-	0.4	Chester	-	29.
Auglaize	367.6	177.4	Delaware	-	129.
Brown	-	0.4	Lancaster	-	24.
Crawford	256.8	32.0	Montgomery ..	-	130.
Defiance	96.6	69.0	Average:		
Delaware	105.4	57.0	1 county ..	117.0	117.
Fairfield	-	4.8	6 counties	-	75.
Fayette	-	16.6			
Fulton	350.4	267.0			
Gallia	-	0			
Hancock	427.6	136.2	Rhode Island:		
Hardin	379.0	207.4	Bristol		
Henry	248.0	119.2	Newport	287.4	163.4
Highland	-	0.4	Kent	237.0	14.4
Hocking	-	0	Providence ..	255.8	5.2
Jackson	-	0	Washington ..	278.2	47.2
Logan	276.0	316.6	Average:		
Lucas	253.4	200.2	4 counties	264.6	57.6
Marion	247.8	248.6			
Meigs	-	0			
Mercer	201.6	272.4	Vermont:		
Morrow	293.6	109.4	Addison	17.0	9.6
Ottawa	184.0	39.0	Bennington ..	178.4	8.0
Paulding	393.6	442.4	Caledonia	2.8	5.4
Perry	-	0.4	Chittenden ..	52.0	21.4
Pickaway	-	6.0	Essex	-	0.4
Pike	-	0.4	Franklin	7.6	18.8
Putnam	391.2	223.4	Grand Isle ..	20.4	26.0
Ross	-	4.6	Lamoille	9.6	7.6
Sandusky	131.2	72.2	Orange	6.6	6.0
Scioto	-	0.4	Orleans	-	5.0
Seneca	238.0	81.2	Rutland	48.6	24.0
Shelby	146.6	210.2	Washington ..	8.2	35.4
Union	165.6	121.6	Windham	110.2	12.4
Van Wert	453.0	307.6	Windsor	13.4	24.6
Vinton	-	0	Average:		
Williams	293.0	18.4	12 counties	39.6	16.6
Wood	189.6	98.6	14 counties	-	14.6
Wyandot	309.6	13.6			
Average:					
25 counties	266.9	156.8			
41 counties	-	96.5			

Table 2.—Data on European corn borer abundance in corn, fall of 1941, and comparisons with data for 1940—Continued






State and county	Average borers per 100 plants	
	1940	1941
	Number	Number
<u>Virginia:</u>		
Accomac	633.3	26.8
Isle of Wight	---	0.8
Nansemond	---	56.0
Norfolk	7.2	3.8
Northampton	392.5	60.2
Princess Anne	601.2	29.4
Essex-Gloucester-)		
Mathews-Middlesex)....	---	6.4
Elizabeth City-)		
James City-)		
New Kent-York)	---	2.0
Lancaster-)		
Northumberland-)		
Richmond-)		
Westmoreland)....	---	4.8
<u>Average:</u>		
4 counties	403.6	30.1
6 counties and		
3 county groups	---	21.1
<u>Wisconsin:</u>		
Calumet	---	2.0
Door	---	1.6
Fond du Lac	---	1.2
Kewaunee	---	2.0
Manitowoc	---	24.4
Ozaukee	14.3	20.4
Sheboygan	---	47.3
Washington	11.3	5.6
<u>Average:</u>		
2 counties	13.3	13.0
8 counties	---	13.1

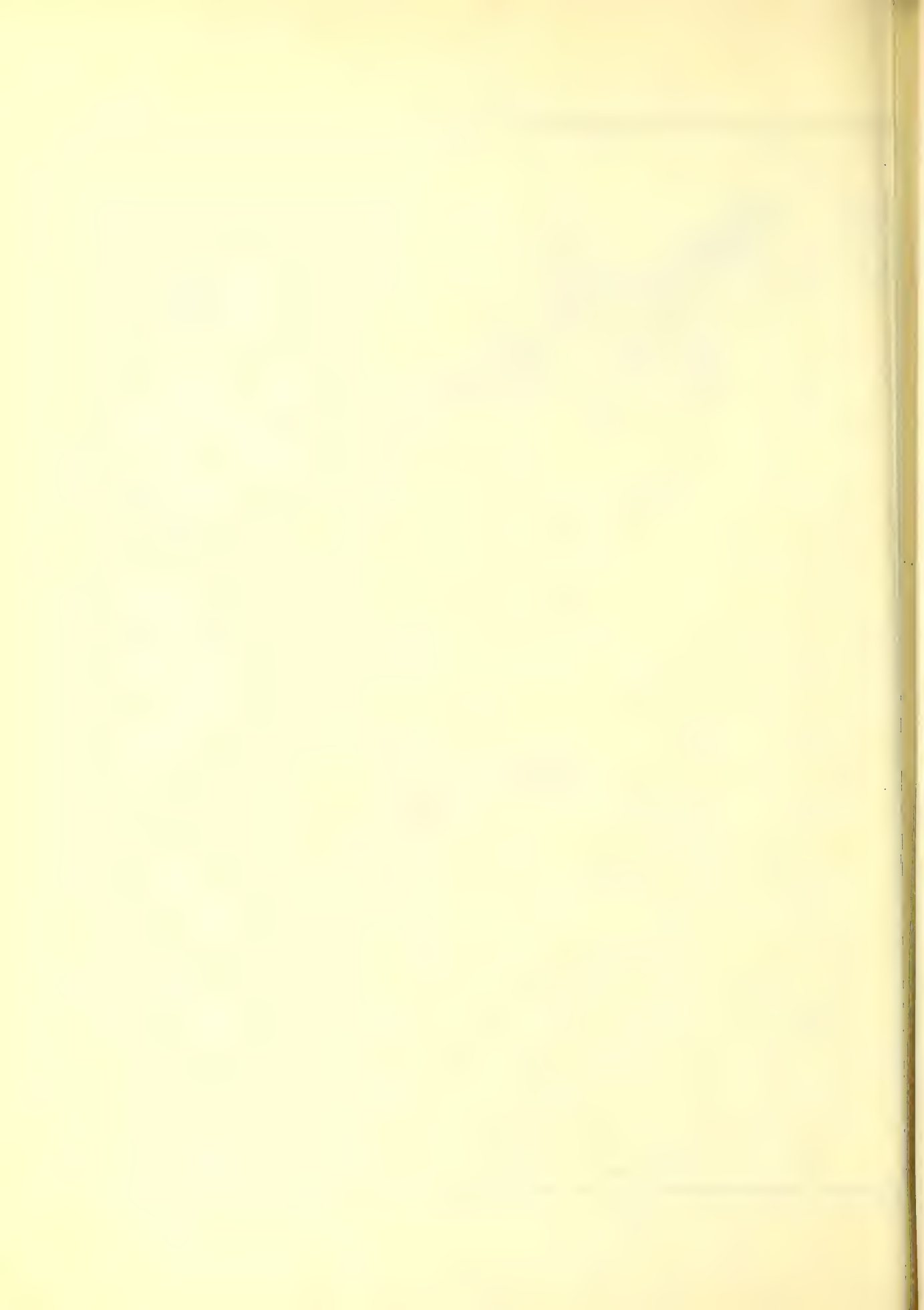
Table 3. Data on European corn borer abundance in early market sweet corn, summers of 1940 and 1941

State and county	1940		1941	
	Fields	Average borers per 100 plants	Fields	Average borers per 100 plants
	Number	Number	Number	Number
<u>Connecticut:</u>				
New Haven	25	493	25	109
<u>Maine:</u>				
Androscoggin	25	16	11	2
Cumberland	20	36	25	3
York	25	33	25	7
<u>Massachusetts:</u>				
Middlesex	—	—	25	22
<u>Michigan:</u>				
Monroe	—	—	5	1,067
<u>New Jersey:</u>				
Burlington	29	510	29	894
<u>New York:</u>				
Albany	7	509	6	169
Columbia	11	425	4	239
Madison	—	—	1	117
Monroe	—	—	9	493
Niagara	—	—	9	674
Onondaga	—	—	1	280
Ontario	—	—	2	30
Orleans	—	—	4	563
Rensselaer	2	392	2	134
Saratoga	7	394	2	250
Schenectady	4	339	6	122
Wayne	—	—	6	372
<u>Ohio:</u>				
Lucas	25	497	25	1,235
<u>Vermont:</u>				
Windham	—	—	10	60



ABUNDANCE AND DISTRIBUTION OF EUROPEAN
CORN BORER IN COUNTIES SURVEYED
IN 1941

- Borers per 100 plants
-  0-100
(Also first recorded
as infested in 1941)
 -  101-300
 -  301-700
 -  First recorded as
infested in 1941
 -  Border of infestation



INSECT PEST SURVEY BULLETIN

Vol. 21

Supplement to No. 9

November 8, 1941

REMEMBER PEARL HARBOR

RECORDS ON DISTRIBUTION OF THE POTATO TUBER WORM (GNORIMOSCHEMA OPERCULELLA ZELL.) IN THE UNITED STATES

The following is a tabulation of the data available to the Bureau of Entomology and Plant Quarantine on the known occurrence of the potato tuber worm in the United States up to December 1, 1941. These data constitute a compilation of the records on file at this time and do not necessarily indicate the areas where this insect is known to be established.

ALABAMA

- | | |
|----------------|---|
| Cullman, 1939: | Reported on potato at Cullman, 9-13-39. Insect Pest Survey 19: 499, 1939. (J. M. Robinson.) |
| ----- | We have no additional records. (J. M. Robinson Oct. 7, 1941.) |
| ----- | Found at Cullman in 1939 in potatoes shipped from Hastings, Fla. We have never had any reports of damage to growing potatoes. (B. P. Livingston, Oct. 7, 1941.) |

ARIZONA

- | | |
|----------------|--|
| Phoenix, 1898: | Specimens (3 adult) in the U. S. Museum, March 7, 1898. |
| Tempe | Specimens (1 adult), rustica leaf miner in the U. S. Museum. (K. McKinney.) |
| ----- | Neither Dr. L. P. Wahrle nor I have any records of the insect in Arizona. (C. T. Vorhies, Oct. 10, 1941.) |
| ----- | O. C. Bartlett, in his list of Arizona Plant Pests, under date of Oct. 24, 1927, reports this insect. (J. L. E. Lauderdale, Sept. 29, 1941.) |

ARIZONA -- (Continued)

Prescott, 1941: H. G. Johnston, extension entomologist, informed me that he took specimens near Prescott, in Yavapai County, this year. (J. L. E. Lauderdale, Sept. 29, 1941.)

----- The pest is apparently of no economic importance in the State, as we have not had any complaints. Almost all of our potatoes are grown in the colder areas of the State. (J. L. E. Lauderdale, Sept. 29, 1941.)

ARKANSAS

----- Has not been found in Arkansas so far as anyone in the Department of Entomology, University of Arkansas, knows. (W.J. Baerg, Sept. 23, 1941.)

----- The Plant Board does not have any records. (P. H. Millar, Sept. 22, 1941.)

CALIFORNIA

General, 1856: A permanent pest in California. It was recorded in the literature as early as 1856 and has been reported frequently to the present time, especially during the last several years.

General Recorded from the following counties: Alameda, Contra Costa, Eldorado, Kern, Los Angeles, Modoc, Monterey, Napa, Orange, Riverside, Sacramento, San Benito, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Shasta, Sonoma, Stanislaus, Ventura, Yolo.

Kern County: Very abundant throughout the large Kern County potato areas, and annual losses are greater than from any other insect. (W. B. Harms, Oct. 9, 1941.)

----- A survey of the five potato-growing districts in Humboldt County was made in 1941 and no specimens found. Not believed to be present in Siskiyou County. (D. B. Mackie, Sept. 23, 1941.)

COLORADO

Colorado given as distribution. U. S. Dept. Agr. Year Book 1898. (L. O. Howard.)

Fort Collins Specimens from. U. S. Farmers' Bul. 557. 1913. (F. H. Chittenden.)

Greeley, 1913: Correspondent sent specimens from Greeley, Sept. 27, 1913, with statement that "these worms bore into the skin and caused the potato to be worm tracked." (Det. by F. H. Chittenden.)

COLORADO -- (Continued)

Otero: ----- U. S. Dept. Agr. Bul. 427, 1917, by J. E. Graf:
County: Otero County mapped as a place of establishment
on potato.

Rocky Ford: --- Proc. U. S. Natl. Mus. 53: 199, 1917. Parasite
reared.

----- --- Has been introduced in potatoes shipped from
infested areas, but so far as we know, has not
gained a foothold. (C. R. Jones, Oct. 20, 1941.)

Olathe, 1941: I am reporting a pick-up of the insect in one
shed on California Mesa, northwest of Olathe, and
in one wholesale house at Olathe during the spring
of 1941. Every potato district in the State was
surveyed during the spring of 1941 with negative
results, with exception of the two named cases. I
am informed that infested potatoes from the California
Mesa were received at State College. (F. H. Gates,
Nov. 13, 1941.)

CONNECTICUT

The insect has not been found to the best of our
knowledge. (R. B. Friend, Sept. 30, 1941.)

DELAWARE

Newark, 1931: Specimens taken from stored potatoes at College Farm,
Agr. Expt. Sta., Newark. Moths emerged April 14-18,
1931. (Determined by A. Busck.) Insect Pest Survey
Bul. 11: 205, 1931. (L. A. Stearns.)

----- --- No report since the note in the Insect Pest Survey
Bulletin report in 1931. (L. A. Stearns, Sept. 18,
1941.)

----- 1941: Specimens of infested potatoes received from Dover,
where they had been stored. (L. A. Stearns, Oct. 8,
1941.) Insect Pest Survey Bul., 21: 642, 1941.

----- --- I have had
opportunity to investigate the infestation at Dover.
The reporter told me that he had observed no damage
in his potato patch, which is within the city limits.
Infestation apparently limited to potatoes in the
cellar. He states that he purchased some southern-
grown potatoes 3 years ago at a roadside market in
this State and since that time potatoes stored in
his cellar have become infested. (L. A. Stearns, Nov.
7, 1941.)

FLORIDA

- Gainesville, 1898: One moth specimen in U. S. Natl. Museum. Tobacco leaf miner, 8-20-1898.
- Lake Alfred, 1929: Adult specimens in U. S. Natl. Museum, potato, April 20 to May 4, 1929. (L. J. Bottimer.)
- Lake City: ---- On tobacco at Lake City; on eggplant in De Soto County and tomato in the State. Fla. Bul. 48: 178, 1898.
- Gadsden County, 1906: On tobacco. U. S. Dept. Agr. Bul. 67: 110, 1907.
- Dade City: ---- Infestation on tobacco from 1906 to 1910. U. S. Dept. Agr. Bul. 59, 1914.
- Brooksville, 1909: Correspondent sent specimens to Bureau with statement that the insect damaged tobacco this season. (Det. by F. H. Chittenden.)
- Quincy, 1913: Specimens (moth) in the U. S. Natl. Museum, tobacco leaf miner, August 27, 1913. (S. E. Crumb.)
- Duval, Gadsden, Pasco, De Soto, Dade, Lake, and Columbia Counties: ---- Duval County mapped as place of establishment on potato; and Gadsden, Pasco, De Soto, Dade, Lake, and Columbia Counties on other food plants. U. S. D. A. Bul. 427: 1917. (J. E. Graf.)
- Greenville, 1924: Slight damage in fields of bright leaf tobacco in May. Insect Pest Survey Bulletin 4: 88, 1924. (F. S. Chamberlin.)
- Lake Worth) 1931: Very abundant on potato in storage at Kissimmee and Lake Worth. Insect Pest Survey Bul. 11: 369, 1931. (E. W. Berger and G. D. Merrill, July 1931.)
- Kissimmee)
- Fort Myers, 1931: Sent in from Fort Myers, where it was doing considerable damage to potatoes in storage. Insect Pest Survey Bul. 11: 369, 1931. (J. R. Watson.)
- Raiford) 1932: Shipment of potatoes from Raiford received and held at Jacksonville, where infestation was discovered. Potatoes evidently infested when received. Insect Pest Survey Bul. 12: 62, 1932. (C. F. Stahl.)
- Jacksonville)

FLORIDA - (Continued)

Osceola, Polk,
Orange, Seminole,
and Manatee Coun-
ties: -----

Investigations carried on in 1937, with living larvae from material sent to the State Plant Board taxonomist, G. B. Merrill, by inspectors working in Osceola, Polk, Orange, and Seminole Counties, and from material brought by J. R. Watson from Manatee County. Fla. Ent. 20: 33, 1937.

Fort Myers, 1939:

Field infestation. (A. C. Brown, Sept. 1941.)

Quincy, 1921-41:

Reported to the Insect Pest Survey from tobacco in Quincy almost every year for the last 20 years, 1921-41. (F. S. Chamberlin, 1941.)

General

1929
to
1940

Following reports submitted by A. C. Brown, September 24, 1941, as being taken from the records in file at the Fla. Agr. Expt. Sta.; at Sebring, 1929, in stored potato; at Kissimmee, 1930, stored potato; at Lake Worth, 1931, in stored potato; De Land, 1933, on potato; Montverde, Dania, and Bunnell, 1934, on stored potato; Waldl and Winter Haven, 1935, stored potato; Kissimmee and Bartow, 1937, on stored potato; Arcadia and Bunnell, 1938, on stored potato; Belle Glade, 1939, on stored potato; Fort Myers, 1939, infestation in potatoes running over grading belt; Miami, 1940, in stored potato.

Fort Myers, 1941:

Infestation in old fields and in old potatoes in packing houses. (A. C. Brown, 9-24-41.)

GEORGIA

I am fairly familiar with this insect and have looked for it but have not seen it; no complete survey has been made. (T. O'Neill, Feb. 2, 1931.)

Norman Park, 1935:

One infestation of the splitworm on tobacco observed this season at Norman Park. Insect Pest Survey Bul. 15: 253, 1935. (F. S. Chamberlin.)

Fitzgerald, 1941:

Specimens collected in tobacco at Fitzgerald, July 24. (Det. by U. S. Natl. Mus.) (M. Murphy.)

I have no records of this insect in Georgia, although I have never searched for it. (T. L. Bissell, Sept. 19, 1941.)

IDAHO

We have not been able to find this insect.
(W. E. Shull, Sept. 23, 1941.)

We have no record. (J. Andrasen, Sept. 22,
1941.)

ILLINOIS

Worden, 1930:

Sent to us in a cooked potato in September.
The only record in Illinois during the last
5 years. (W. P. Flint, Nov. 1930.)

The above-cited record is the only one we
have received and we have made several efforts
to check on its occurrence. (W. P. Flint,
Sept. 20, 1941.)

INDIANA

Pleasant Lake, 1917:

Correspondent sent specimens to Bureau with
statement that it was found in this year's
potatoes, October 6, 1917. (Det. by F. H.
Chittenden.)

New Haven)
Fort Wayne) 1930:

Infested potatoes received from Fort Wayne,
shipped there from Virginia. Home-grown
potatoes purchased near New Haven had the
same infestation. Insect Pest Survey Bul.
10: 381, 1930. (J. J. Davis.)

The above record is the only one for Indiana.
(J. J. Davis, 1941.)

IOWA

Iowa City)
Sioux City) 1918:

Three adult specimens from Iowa City. G. G.
Ainslie. (No food or date.) Sixteen adult
specimens from Sioux City, C. W. Ainslie.
(No food or date.)

Ames -----

One adult specimen in U. S. Museum, Ames,
August 23, 1918, A. W. Lindsey. (No food
plant.)

Des Moines,
Nevada, Ames, 1933:

Found in every potato patch examined in
vicinities of Des Moines, Nevada, and Ames,
July 27, 1933. Insect Pest Survey Bul. 13:
203, 1933. (C. J. Drake.) (Det. by C.
Heinrich.)

----- 1933:

Specimens taken from various points in eastern
half of State, June 12, 1933. Jour. Econ. Ent.
26: 1,173, 1933. (H. D. Tate.)

IOWA - (Continued)

Greene and
Story Counties, 1934:

Found in potato patches in Greene and Story Counties, August 2, 1934. Although established in State for several years, it has not been observed to do any commercial damage. Insect Pest Survey Bul. 14: 226, 1934. (C. J. Drake.)

Davenport, Council
Bluff, Osage, .
Saint Ansgar, 1934:

Specimens taken in potatoes at Davenport during the latter part of July; in potatoes at Council Bluff and in the vicinities of Osage and Saint Ansgar during the first week in August. (C. J. Drake, 1941.)

Ames) 1935, 1936,
Des Moines) and 1937

We found it in potatoes in Ames and Des Moines in 1935, 1936, and 1937. (C. J. Drake, 1941.)

This year we looked for the insect working as a leaf miner in Ames, but failed to find it. We have never found it breeding in the tubers. Although potatoes at Ames were exposed late in July and in August to obtain specimens, none were found. (C. J. Drake, 1941.)

KANSAS

Ford County: -----

On map, indicated as introduced but not established. No reference to food plant. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

No record of infestation of potato or tobacco growing in Kansas. On June 7, 1940, a carload of new potatoes, shipped from California to Salina, Kans., was seriously infested with larvae. We refused to permit the potatoes to be delivered or sold within the State. (G. A. Dean, 1941.)

No specimens in our collection that were taken in the State. (H. B. Hungerford, 1941.)

KENTUCKY

Owensboro,
Utica,
Lexington,
Bremen, 1931:

Specimens taken from tobacco received from Owensboro, Utica, Lexington, and Bremen. First appearance of pest in State. Insect Pest Survey Bul. 11: 297, 1931. (W. A. Price.)

Daviess,
Fayette,
Henderson
Counties: -----

Clipping, Courier Jour. June 25, 1931. Discovered in several tobacco-growing sections of the State, including Daviess, Fayette, and Henderson Counties.

KENTUCKY - (Continued)

Daviess, Fayette, Henderson, and Muhlenberg Counties: 1931 Insect found on tobacco in Daviess, Fayette, Henderson, and Muhlenberg Counties in 1931. Very little damage done at that time, and insect not observed on tobacco or potato since. (W. A. Price, 1941.)

LOUISIANA

Florence, 1913: Correspondent sent specimens from potato to the Bureau and asked for remedy. (Det. by F. H. Chittenden.)

Cameron and Vermilion Parishes, 1917: Cameron Parish mapped as permanent establishment on food not named; Vermilion Parish mapped as permanent establishment on potato. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

Saint Benedict, 1938: Collected at Saint Benedict, 8-28-38. Insect Pest Survey Bul. 18: 544, 1938. (C. O. Eddy.) (Det. by A. Busck.)

Saint James, Saint John the Baptist, Terrebonne, Lafourche, and Iberville Parishes, 1941: A rather general survey conducted in 1941 over the State as a whole, more intensive work being done in the commercial potato-producing sections. Following infestations recorded: Six infested properties in Saint James Parish; 3 in Saint John the Baptist Parish; 58 in Terrebonne Parish; 54 in Lafourche Parish; and 1 in Iberville Parish. (W. E. Anderson, 1941.)

MAINE

----- Hancock County mapped as introduced without establishment; no reference to food plant. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

----- We have never found a specimen in the State. (S. L. Painter, 1941.)

----- Accession records and inquiries by other members of the Department show no record of occurrence in Maine. (F. H. Lathrop, 1941.)

MARYLAND

District of Columbia ----- The insect has been found as far north as the District of Columbia on eggplant and ground-cherry. U. S. Farmers' Bul. 557, 1913.

Howard, Montgomery, and Prince Georges Counties District of Columbia ----- Mapped as permanently established on plants other than potato in the District of Columbia, part of Montgomery County, almost covering Howard County, and in some of Prince Georges County. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

MARYLAND - (Continued)

Pocomoke, 1923:

Larvae found in storage and in field. (E. N. Cory, Dec. 20, 1923.)

General ----

Since 1923 it has been recorded repeatedly in the literature and in reports to the Insect Pest Survey. Reports have been received from the following counties: Baltimore, Calvert, Caroline, Cecil, Frederick, Prince Georges, Queen Annes, Saint Marys, Somerset, Talbot, Wicomico, and Worcester.

No outbreak since 1930. Of no commercial consequence in the State, except under unusually favorable weather conditions. No infestation in potatoes seen in 1941. Marketable leaves of tobacco never attacked. Survey of fields in June showed no infestation in Worcester County. (E. N. Cory, 1941.)

MASSACHUSETTS

Mapped as introduced but not established; no food reference. Det seems to be over Boston. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

Presence of insect never noted in the State, either through personal observation or by report. Similar report from field station at Waltham. (A. I. Bourne, 1930.)

Inquiries over the State, including the field station at Waltham and H. J. Franklin at East Wareham, indicate no record in Massachusetts. Typical injury found in imported seed potatoes in Hampden County about 10 years ago, but no specimens present. (A. I. Bourne, 1941.)

MICHIGAN

During late August 1932, specimens were sent from a potato dealer at Owosso; potatoes found to have been shipped from Virginia. Mich. Quar. Bul. 15: 70, 1932. (R. H. Pettit.)

The above record is the only one of occurrence in Michigan. (R. Hutson, 1941.)

To my knowledge, specimens have never been found in Michigan, only on shipped-in stock. (C. A. Boyer, 1941.)

MINNESOTA

Saint Paul,
Minneapolis, 1940:

Found in potatoes stored in warm cellars in two localities about 15 or 20 miles apart in the vicinity of Saint Paul and Minneapolis. First actually determined in 1940 while examining tubers for pit scab. Subsequent examination of several commercial potato cellars gave negative results. Insect Pest Survey Bul. 21: 99, 1941. (A. A. Granovsky, April 15, 1941.)

Found only on University Farm property.
(A. G. Ruggles, 1941.)

MISSISSIPPI

Gulfport, 1913:

Correspondent sent specimens to Bureau and asked for remedy, November 11, 1913. (Det. by F. H. Chittenden.)

Harrison County, 1940:

Specimens, apparently this species, sent with statement that potatoes were destroyed in storage on farm in September. (C. Lyle.)

Hancock County, 1940:

Specimens found on September 26, 1940, in Hancock County on a few potatoes held over from the spring crop. (C. Lyle, 1941.)

Harrison County, 1941:

Specimens received from three farms. Insect Pest Survey Bul. 21: 587, 1941. (C. Lyle.)

Found on August 30, 1941, on one farm in Harrison County, and subsequently on two other farms. Considered of minor importance on potatoes in this section. (C. Lyle, 1941.)

MISSOURI

Platte County, 1929:

Found on tobacco. (F. W. Poos.)

This office has no authentic record of this insect on either potato or tobacco. (L. Haseman, 1941.)

No record of this insect in Missouri. (J. A. Denning, 1941.)

MONTANA

Lewis and Clark County mapped as place of introduction but no establishment. (No reference to food plant.) U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

No records at Bozeman of this insect having been taken in the State. (H. B. Mills, 1941.)

MONTANA -- (Continued)

Insect intercepted on shipments of potatoes into Montana, principally from California, but no record of its being intercepted in local potatoes. (G. L. Knight, 1941.)

NEBRASKA

Cass County, 1939:

Found to have severely injured about 125 bushels of potatoes in Cass County, September 28, 1939. First record of this pest for the State. Insect Pest Survey Bul. 19: 563, 1939. (H. H. Swenk.)

Cass County, 1939:

Not found in Nebraska until 1939, when it was reported as ruining the potato crop in Cass County. Evidently introduced in seed from out of the State. Nebr. State Bd. Agr. Rpt., 1940: 445. (O. S. Bare.)

Lincoln, 1940:

Specimens collected from potatoes near Lincoln, producing more or less characteristic damage, August 31, 1940. Insect Pest Survey Bul. 20: 452, 1940. (H. D. Tate.) (Det. by C. Heinrich.)

Elmwood)
Lincoln)

Two infestations in the State, one at Elmwood in 1939 and one near Lincoln in 1940. Survey in location near Lincoln in 1941 showed no specimens nor injury. No commercial damage found in 1940 nor in 1941 during surveys in western Nebraska. (H. D. Tate and L. M. Gates, 1941.)

NEVADA

No records of field or storage infestations in the State. (G. G. Schwedis, 1941.) No information on distribution of the insect. (S. B. Doten.)

NEW HAMPSHIRE

No record of the insect ever having been taken, either in potato or tobacco, in New Hampshire. No recent search has been made. (J. G. Conklin, 1941.)

NEW JERSEY

Insect found on potatoes coming into New Jersey from the Eastern Shore of Virginia and Maryland, but no infestations in New Jersey. N. J. State Agr. Bul. 16: 154, 1931. (H. B. Weiss.)

Insect not established in New Jersey to my knowledge. Intercepted in 1924 and in 1930 in seed potatoes from Maryland and Virginia. Surveys reveal no infestations in New Jersey. (H. B. Weiss, 1941.)

NEW JERSEY -- (Continued)

----- Accession records as far back as 1910 indicate no record of occurrence in New Jersey. (B. B. Pepper, 1941.)

NEW MEXICO

----- Inspections at harvest and in storage show no infestations in the State. (J. R. Eyer, 1941.) So far as I know, this insect does not occur in the State. (R. F. Crawford, 1941.)

NEW YORK

New York

----- Specimens received from New York City, on potato; not acclimatized, so far as is known. U. S. Farmers' Bul. 557, 1913. (F. H. Chittenden.)

----- Mapped as introduced into New York City, but not established; no reference to food plant. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

Rochester, 1937:

Outbreak discovered in a potato storage in Rochester in 1937. Outbreak eradicated. No location known where this insect is established. (A. B. Buchholz, 1941.)

----- Inquiries in several counties indicate no infestations. (W. A. Rawlins, 1941.)

NORTH CAROLINA

Kinston

----- Specimens in the U. S. Natl. Museum, one from tobacco at Kinston, no date. (G. A. Runner.)

Raleigh, 1896:

Specimens from tobacco at Raleigh, June 27, 1896 and August 5, 1896. (T. Pergande.)

----- A native moth, feeding on Solanum carolinense and tobacco in parts of North Carolina by leaf mining. N. C. Bul. 141: 133, 1897. (G. McCarthy.)

Beaufort, Bertie,
Camden, Currituck,
Franklin, Gran-
ville, Halifax,
Northampton,
Pasquotank, Vance,
Warren, and
Washington Coun-
ties:

----- Intensive survey of northern and eastern parts of State in fall of 1926 to determine presence or absence of insect. Found in small numbers in several counties. Observed breeding on potato, tobacco, and wild hosts. Not a pest of serious proportions, except under favorable weather conditions. Intercepted frequently on shipments into the State. N. C. Dept. Agr. Dien. Rpt. 1925-26: 52-53. (R. W. Leiby.)

NORTH CAROLINA - (Continued)

Craven County, 1930: Heavily infested potatoes sent in from Craven County, September 25, 1930. Insect Pest Survey Bul. 10: 381, 1930. (C. H. Brannon.)

Kinston, 1932: Infested potatoes sent in with statement that it was very destructive last year, March 9, 1933. Insect Pest Survey Bul. 13: 83, 1933. (C. H. Brannon.)

Pasquotank County, 1935: Infested potatoes sent in from Pasquotank County, October 16, 1935. (C. H. Brannon.)

Oxford, 1937: Light damage to tobacco by this insect, which first appeared on June 14, 1937. Insect Pest Survey Bul. 17: 247, 1937. (J. U. Gilmore.)

Beaufort, Found on tobacco at Raleigh and Kinston; found
Carteret, breeding in potato in Beaufort and Carteret Coun-
Lenoir and ties. N. C. Dept. Agr. Div. Ent., Insects of
Wake Counties: ---- W. C., 303, 1938. (C. S. Drinley.)

Gaston County, 1938: Reported as attacking potatoes and doing serious damage, September 30, 1938. (Z. P. Metcalf.)

Greenville ---- In addition to the counties already cited in 1926, this insect has been found at Greenville, in Pitt County. (C. S. Drinley, 1941.) Not a pest of potatoes in the State as the market crop is harvested before the tubers are affected; there are no late potatoes in part of State where it is known to occur. (C. S. Drinley, 1941.)

Nash, Edgecombe, -- Irregularly of minor importance to tobacco in
Wilson, Wayne, counties of Caswell, Person, Granville, and Vance,
Johnston, Harnett, and in the coastal plains area. Observed in the
Cumberland, and past in eastern Wake County, and in Franklin,
Robeson Counties: ---- Nash, Edgecombe, Wilson, Wayne, Johnston, Harnett,
Cumberland, and Robeson Counties. In my experience,
never a serious pest on potato, but noticed in
Currituck, Camden, Beaufort, Craven, and Pamlico
Counties. (Z. P. Metcalf, 1941.)

NORTH DAKOTA

----- Specimens in potato at Larimore, August 8, 1912,
intercepted in shipment from California. U. S.
Farmers' Bul. 557, 1913. (F. H. Chittenden.)

----- Chittenden's record is the only one I know of;
no subsequent report, and intensive potato-insect
research in the last few years has not revealed
its presence. (H. S. Telford, 1941.)

OHIO

Shelby, 1915:

Specimens received from Shelby, April 17, 1915. We have been almost sure of its presence in Ohio before, but this is the first definite instance. Ohio Hort. Soc. Rpt. 49, 1916. (H. A. Gossard.)

Columbus, 1931:

A few larvae nearly full grown and empty mines in potato leaves found in field at Columbus, June 29, 1931. (F. W. Poos.) (Det. by A. Fusck.)

----- Our records show but three authentic references to this insect in Ohio, the one from Shelby in 1915 not making clear whether the infested potatoes were home grown. The other two instances were interceptions in shipments from out of the State. (J. S. Houser, 1941.)

OKLAHOMA

----- Museum records show no report of occurrence in Oklahoma. (F. A. Fenton, 1941.)

OREGON

Eugene, 1914:

Correspondent sent specimens and asked for remedy, December 7, 1914. (Det. by F. H. Chittenden.)

Prairie City, 1915:

Correspondent sent specimens and asked for remedy, October 11, 1915. (Det. by F. H. Chittenden.)

----- Specimens sent without comment, April 1926. (D. C. Mote.) (Det. by A. Fusck.)

----- No record or information of further occurrences, and no infestation known at present. (F. McKennon, 1941.)

----- Specimens taken in 1936 were intercepted at Portland in ship's stores. No infestation in Oregon to my knowledge. (D. C. Mote, 1941.)

PENNSYLVANIA

Cook Station, 1919:

Adult specimen in U. S. Natl. Museum, Oak Station, May 15, 1919. (F. Marloff.)

Lehigh County
Shippensburg

----- In 1925 an infestation was found in a shipment of potatoes into Lehigh County. Origin of potatoes not known. During latter part of summer of 1930 potatoes containing heavy infestation were found near Shippensburg. These potatoes originated in Baltimore, Md. (H. E. Hodgkiss.)

PENNSYLVANIA - (Continued)

----- Surveys show that this insect is not established in the field, although several interceptions from Maryland and Virginia have been made. (T. L. Gorton, 1941.)

----- Other than the infestations in 1925 and 1930 which were eradicated, there are no records of infestation in the State. (H. E. Hodgkiss, 1941.)

RHODE ISLAND

----- We have never had any reports on this insect in the State. (A. E. Stene, 1930.)

Wakefield, 1936:

Only record I have is from our card file, of larva in potato tuber at Wakefield, January 1936. (C. C. Jennings, 1941.) (Det. by A. Busck.)

SOUTH CAROLINA

Sandy Run, 1898:

Did more damage to tobacco than all other insects combined in the neighborhood of Sandy Run, Lexington County, in 1898. U. S. Dept. Agr. Yearbook, 1898. (L. O. Howard.)

----- Listed as occurring in the State. U. S. Dept. Agr. Bul. 59, 1914.

Charleston, 1941:

This spring I found that potatoes left in the field over night were infested later in the season. (J. A. Berley, 1941.) (Det. by J. F. G. Clarke.)

General, 1940:

In the truck section of the State, the insects spread from a house where some mummied potatoes left from previous year were stored. Found in 1940. (W. C. Nettles, 6-26-41.)

SOUTH DAKOTA

Elk Point, 1913; and
1918:

Specimens in U. S. Natl. Museum, August 1913 and August 1918. (C. M. Ainslie.)

Sioux Falls)
Watertown)

----- Our records show that the insect was taken in Watertown and Sioux Falls some years ago. (H. C. Severin, 9-30-41.)

----- We have communicated with the county agents of these counties, also with the county agent of Hamlin County, and they have no records of the insect in their counties. (H. C. Severin, Sept. 30, 1941.)

TENNESSEE

Clarksville, 1913:

Specimens in U. S. Natl. Museum of larvae and pupae from potato at Clarksville, Aug. 18, 1913. Also adults taken from Physalis, Solanum carolinense, tobacco, and potato, in Clarksville, July 5 to October 15, 1913. (S. E. Crumb.)

Attacking tobacco at Clarksville. Leaf-mining Insects, 1928, p. 158. (Needham, Frost, and Tothill.)

Clarksville, 1931:

Attacking tobacco at Clarksville. More abundant than in average year. Insect Pest Survey Bul. 11: 548, 1931. (J. U. Gilmore and J. Milam.)

Lawrence County, 1938:

Reported in Lawrence County on potato, September 26, 1938. (G. M. Bentley.)

Robertson County ----

In the summer of 1939 I had the opportunity of meeting six outstanding tobacco growers of Robertson County. They said that the tobacco splitworm had been in the county several years, but damage was small. (G. M. Bentley, 1941.)

TEXAS

Fredericksburg, 1891
and 1892:

In letter dated September 1893, a correspondent says the insect was very abundant in potato last year. Was present but not abundant in 1891 and 1892 in the same place. Insect Life, 6: 276, 1894. (L. O. Howard.)

Brownsville, 1898:

Larvae in the U. S. Natl. Museum, taken from egg-plant April 20, 1898.

Wharton, 1911:

Letter to Bureau says there was a serious outbreak at Wharton, July 19, 1911, in the potato-growing area.

A correspondent of the Bureau writes: "These pests threaten to destroy the greater part of seed potatoes in storage at Eagle Lake, July 27, 1912. (No specimens.)"

A correspondent of the Bureau reports the insect on potato at Eagle Lake, July 3, 1913. (No specimens.)

Austin, 1913:

Correspondent of Bureau sent specimens taken from potato, and asked for remedy, August 18, 1913. (Det. by F. H. Chittenden.)

TEXAS -- (Continued)

- Eagle Lake)
Hallettsville) ----- Specimens received from potato at Eagle Lake and Hallettsville. U. S. Farmers' Bul. 557, 1913. (F. H. Chittenden.)
- E. G. Smyth writes to the Bureau on control work of the insect in barreled potatoes at Eagle Lake, December 16, 1917.
- Brownsville ----- Has been found mining the leaves of Physalis mollis and Solanum elaeagnifolium at Brownsville. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)
- Colorado, Dallas, Lavaca, and Travis Counties: ----- Counties of Colorado, Dallas, Lavaca and Travis show the insect to be established on potato. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)
- Industry, 1918: Specimens received from Austin County on potato, July 20, 1918. (F. B. Paddock.)
- Matagorda County: ----- I remember that the insect has been found at various points in the southwestern part of the State, as far eastward as Matagorda County. Most often found in stored potatoes. (R. E. McDonald Aug. 31, 1929.)
- Fort Worth: ----- The only record in our office is one from Fort Worth in an area where few potatoes are grown; probably a result of potatoes being shipped in. (F. L. Thomas, April 4, 1941.)
- We make an annual inspection of the lower Rio Grande Valley potato-growing area and have no record of the pest being found in that section since our survey began. We found it in the Eagle Lake section. (J. M. Del Curto, Oct. 21, 1941.)

UTAH

- Salt Lake City, 1913: Correspondent sent specimens to Bureau with statement that many thousand bushels of potatoes in Salt Lake City were rendered unsalable, November 1, 1913. (Det. by F. H. Chittenden.)
- Cache County was mapped as a place of introduction, but no establishment. U. S. Dept. Agr. Bul. 427, 1917: (J. E. Graf.)
- Beryl, 1926 -1932: Between the years 1926 and 1932, two reports were received that this insect was present in Utah at Beryl, in Iron County. During the spring of 1933, additional verbal reports were received. (G. F. Knowlton, Sept. 23, 1941.)

UTAH - (Continued)

- Specimens sent to the Bureau for determination, from Salt Lake City, November 19, 1931.
- I received reports in 1933 that live tuber worms had been found in potatoes in the Salt Lake market, shipped from California. I examined potatoes from California in 1931 or 1932. Reports that trucks had also brought infested potatoes to the Provo, Brigham, Logan, Ogden, and Richfield markets were given to me during my inquiry. (G. F. Knowlton, 9-23-41.)
- Beryl, 1932: F. E. Stephens reports the occurrence of the insect in one potato field at Beryl. (G. F. Knowlton 4-28-32.)
- Beaver, Iron, and Washington Counties: ----- Three counties -- Washington, Iron, and Beaver -- are now quarantined because of the presence of the moth. (G. F. Knowlton April 18, 1934.)
- Enterprise, 1934: Damage to potato leaves was noted on volunteer potatoes at Enterprise, Washington County. (G. F. Knowlton, July 1934.)
- General, 1936: Very little injury observed or reported in infested section of Utah. (G. F. Knowlton, Oct. 10, 1936.) Insect Pest Survey Bul. 16: 407, 1936.
- General, 1938: Injury very rare in the infested area in 1938. (G. F. Knowlton, Dec. 3, 1938.)
- Numerous reports from farmers and county agents in Beaver, Iron, and Washington Counties state that they have seen no moths, larvae, or damage for about 5 years. (G. F. Knowlton, Feb. 23, 1940.)
- No reports of potato tuber moth infestation or injury in Utah have reached me during 1940 and 1941. (G. F. Knowlton, Sept. 20, 1941.)

VERMONT

- We have no record of the potato tuber worm in the State. (H. L. Bailey, Oct. 1, 1941.)

VIRGINIA

Norfolk

- Eight specimens in U. S. Natl. Museum, collected at Norfolk -- one on horsenettle, one on potato, two on tobacco, and four on eggplant. No date given.

VIRGINIA - (Continued)

Pittsylvania
County, 1898:

In 1898 I found the insect mining tobacco leaves in Pittsylvania County. U. S. Dept. Agr. Year-book. 1898. (L. O. Howard.)

Diamond Springs, 1909:

Abundant on eggplant at Diamond Springs. C. H. Popenoe. (Det. by A. Busck.)

Chatham, 1913:

U. S. Natl. Museum collection of specimens. Chatham, three larvae on tobacco, August 29, 1913. (E. A. Runner.)

Onley, 1923:

At Onley, Accomac County, 26 larvae on potato, in U. S. Natl. Museum November 7, 1923. (W. H. White.)

Onley, 1927:

At Onley, 30 larvae in U. S. Natl. Museum, collected by H. S. Peters, August 1927. (No food plant given.)

Among States listed in distribution. U. S. Dept. Agr. Bul. 59, 1914. (Morgan and S. E. Crumb.)

Norfolk and
Pittsylvania
Counties:

Pittsylvania and Norfolk Counties mapped as established on plants other than potato. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

Northampton County,
1923:

The potato tuber moth has become established in Northampton County on the Eastern Shore of Virginia, November 5, 1923. (H. Spencer, 1923.)

Nassawadox,
Eastville,
Norfolk, 1923:

Larvae injuring potato were found September 28, 1923. Infested potatoes received from Eastville and Nassawadox, October 16-17, 1923. Several barrels of seed potatoes from Norfolk, in which larvae and pupae were present, were found. December 17, 1923. Va. Truck Expt. Sta. Bul. 53: 419, 1925. (H. Spencer and W. O. Strong.)

Norfolk County, 1924:

Wormy potatoes were found in the Western Branch section of Norfolk County, January 5, 1924. In 1924 worms had spread northward an average of about 15 miles and were much more numerous than they had been the previous year. In 1925 foliage was found infested May 8. Va. Truck Expt. Sta. Bul. 53: 419, 1925 (H. Spencer and W. O. Strong.)

James City and
New Kent Counties: ---

Present in James City and New Kent Counties. Bureau Correspondence, October 20, 1925. (C. E. Kauffman.)

VIRGINIA - (Continued)

Arlington ----- Noted on Datura meteri at Arlington. No date given. (F. W. Poos.)

----- 1925: Noted as a pest in Virginia in 1925. Va. State Crop. Pest Com. Quart. Bul. 7: 4. (Sept. 11, 1926.)

Northampton and Acconac Counties, 1925: There was a severe outbreak in the foliage of the fall crop of potato in 1925. Va. Polytech. Inst. Bul. 251, 1926.

General ----- Since the insect was first found in abundance in 1923 it has been recorded repeatedly in the literature and in reports to the Insect Pest Survey. Recorded from these additional counties: Brunswick, Caroline, Dinwiddie, Greenville, King George, Lancaster, Mathews, Middlesex, Nansemond, and Richmond.

Onley, Bowling Green, Richmond, (south side): ----- During investigations in 1926 and 1927 the pest was found at these places on tobacco. Va. Truck Expt. Sta. Bul. 61, 1927.

Arlington Farm, 1928, 1929 and 1930: Only a trace found in tobacco in 1928 and 1929 at Arlington Farm. Many times more abundant in 1930 than in 1928 and 1929. Found in potato, tobacco, jimson weed, and Datura innoxia. (F. W. Poos, 1930.)

Toano, Pungo, Fentress, 1933: Scarce in potato fields at Toano, Pungo, and Fentress. Infestations found only near packing sheds and outbuildings where potatoes were stored late last fall (1932). (C. R. Wiley, June 26, 1933.)

----- ----- A great deal of careful scouting on the Eastern Shore failed to find a single worm. (H. G. Walker, July 26, 1934.)

Norfolk, 1935: The worm is very scarce this spring. It has only been found in one field in the Norfolk area. (H. G. Walker, June 25, 1935.)

Northampton, Acconac, Princess Anne Counties, 1935: More abundant in Princess Anne, Northampton, and Acconac Counties than last year. (C. R. Wiley, Dec. 18, 1935.)

Arlington, 1937: Two adults were found at Arlington Farm. (F. W. Poos, Jan. 7, 1937.) (Det. by A. Busck.)

VIRGINIA - (Continued)
Eastern Shore, 1939:

Within the last few days reports of attack on barreled and sacked potatoes on the Eastern Shore have been numerous. (H. C. Donohoe, July 15, 1939.)

Eastern Shore, 1941:

Doing considerable damage to several potato fields on the Eastern Shore, October 1-2, 1941. (C. R. Willey.)

Eastern Shore, 1941:

The potato tuber moth caused very severe damage in many fields of potatoes on the Eastern Shore. At harvesttime many of the tubers an inch or more below the surface of the ground were infested. These potatoes were placed in storage and many barrels of potatoes were seriously damaged. (H. G. Walker, Nov. 12, 1941.)

WASHINGTON

Seattle, 1913:

Correspondent sent specimens from potato, and asked for remedy. Bureau correspondence July 31, 1913. (Det. by F. H. Chittenden.)

Auburn,
Seattle,
and Yakima: ---

The species on potato has been received from Auburn, Seattle, and Yakima. U. S. Farmers' Bul. 557, 1913. (F. H. Chittenden.)

We have had this pest reported in our State several times in the last 2 years and several carloads of infested potatoes have been destroyed. Bureau correspondence. (M. A. Yothers, Feb. 27, 1914.) (Det. by F. H. Chittenden.)

Seattle, 1915:

I can state positively that this moth attacks the stems of potato. Bureau correspondence. (J. J. Mathews, Feb. 6, 1915.) (Det. by F. H. Chittenden.)

King and Yakima Counties are mapped as places where this insect was introduced but not established. U. S. Dept. Agr. Bul. 427, 1917. (J. E. Graf.)

Ritzville, 1920:

Adult specimen in the U. S. Natl. Museum from Ritzville, Adams County, on July 1920. (R. C. Shannon.)

1941:

Practically all of the potatoes in this State have been harvested, and with all the certification our department is doing, no infestation has been found. (F. E. DeSellen, 1941.)

WEST VIRGINIA

- Search of my records shows that the insect has not been recorded in the State. (L. M. Peairs, Dec. 4, 1930.)
- To the best of our knowledge, investigations in potato fields have never shown the presence of the insect. (F. W. Craig, Sept. 23, 1941.)
- 1941: I have often taken moths, which I assumed to be this species, at trap lights, but have never had the identification checked. So far as observations or complaints are concerned, there is little or no injury from the insect to potatoes. I have no record of the insect on tobacco. On several occasions have thought that I had found the insect in some of the ornamental forms of tobacco at Morgantown, but never succeeded in rearing the moths. The injury resembled very closely the descriptions of the work in ordinary tobacco. (L. M. Peairs, Sept. 30, 1941.)

WISCONSIN

- 1914: The tobacco splitworm was found in the State last summer. Wisc. Bul. 250: 30, 1915. (E. L. Russell 1915.)
- Dane County ----- This county is mapped as a place where the species is established on plant other than potato. U. S. Dept. Agr. Bul. 427, 1917. (J.E. Graf.)
- S. B. Fracker, in February 1917, wrote to the Bureau for specimens from California to compare with specimens from Wisconsin.
- Dane, Jefferson, and Rock Counties, 1931: Many fields of tobacco in Wisconsin show injury by the splitworm for the first time in many years; some fields in Dane, Jefferson, and Rock Counties seriously damaged. Insect Pest Survey Bul. 11: 466, 1931. (E. L. Chambers.)
- 1933: The tobacco splitworm is again showing up in spots in southern Wisconsin. Insect Pest Survey Bul. 13: 209, 1933. (E. L. Chambers.)
- E. H. Searls says: "We studied the insect as the tobacco splitworm in 1931. We found 5.7 percent of the plants in nurseries infested on July 7. On July 10, 11.7 percent of the plants were rosetted as a result of splitworm injury." T.C. Allen notes: "To date we have no records or specimens of the potato tuber moth." C. L. Fluke states

WISCONSIN - (Continued)

"I am unable to find anything, but did not check all the departmental reports." (H. F. Wilson, Nov. 18, 1941.)

----- In going through our records, we find there was a trace of the tobacco splitworm each year from 1934 to 1938. Since that time we have had none reported by the growers; and specialists working with tobacco report that they rarely see it. (E. L. Chambers, Sept. 26, 1941.)

WYOMING

----- Insofar as I have been able to determine, this insect does not exist in the State. (R. T. Snipes, Sept. 24, 1941.)

A PRELIMINARY CHECK LIST OF THE ENTOMOGENOUS FUNGI OF NORTH AMERICA

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The fungi which parasitize or grow in association with many species of economic insects have long been a subject of interest to entomologists. Information concerning them, however, is widely scattered and often appears in periodicals or mycological works not readily accessible to the working entomologist or others interested. It has seemed worth while, therefore, to prepare this list as a means of pointing out the large numbers of fungi and insect hosts actually involved.

It is recognized that the list can be considered as preliminary only, because there are undoubtedly many entomogenous fungi and their insect hosts as yet unreported or overlooked in the preparation of this paper. It is hoped that the list will awaken sufficient interest to stimulate entomologists, mycologists, and collectors in general to report new fungi and new hosts, as well as further distributional records. Such assistance will be appreciated and will serve to make possible in the future a more complete and thereby more useful list.

The data presented here are based primarily on an index of entomogenous fungi which has been maintained for many years as part of the Mycological Collections of the Bureau of Plant Industry. This index includes data from the literature on the subject, including fungus lists and monographic accounts, from correspondence and from herbarium specimens. Only the herbaria of the Bureau of Plant Industry and the Smithsonian Institution have been worked over in this connection. Time and circumstances have not permitted work in other fungus herbaria, but it is hoped that available data from other institutions can be obtained later on. The Laboulbeniaceae, constituting a very large group of minute species, have not been considered because, although parasitic on insects, they do not kill their hosts and are therefore not entomogenous fungi in the usual sense of the term.

Geographically the list covers the North American Continent, including the West Indies and the countries of Central America, which is essentially the area included in Seymour's "Host Index of the Fungi of North America." Except for the United States and Puerto Rico, however, available data are decidedly fragmentary, but serve at least to point out how little is known on the subject and where the gaps in our knowledge occur.

For ease of reference an alphabetical arrangement of the species is presented, no attempt being made to follow any system of classification. Each recognized species is set off in caps followed by the authority and a citation to the place of publication. Pertinent synonyms, that is to say, those which occur in the entomogenous fungus literature, have been included, but no effort has been made to work out complete synonymy. Synonyms are underscored.

Insect hosts are arranged under each fungus in alphabetical order and to the right of each is placed the known distribution of the fungus attacking it. For the United States distribution is indicated by States, but otherwise by countries. Hosts for which no specific distribution is indicated are records from Seymour's "Host Index of the Fungi of North America" or other sources which omit reference to locality. In general, records of insect hosts infected by artificial inoculations have been omitted.

A complication often arises in that many fungi in the course of their life cycles may produce two reproductive stages and each may be given a distinct botanical name. This is particularly true in the case of the ascus-producing fungi (Ascomycetes) where normally a perfect (ascus) stage and an imperfect (conidial) stage occur, as for example Ophiocordyceps clavulata (Schw.) Petch and Hirsutiella lecaniicola (Joap) Petch. The latter name applies to the so-called imperfect stage. Under the rules of botanical nomenclature, the perfect-stage name has precedence over any names applied to conidial or imperfect stages and is given preference in this list; however, as many conidial names occur commonly throughout the literature they have been included, but their status as such properly indicated. Cross references will enable such fungi to be located under either name.

A list of insects with their entomogenous fungi is appended. As noted above, the place of publication of each fungus species is cited, but it is recognized that this is of interest primarily to the systematic mycologist. The entomologist or general collector will be more concerned with the general literature on the subject and, accordingly, a few of the more important and accessible works dealing with entomogenous fungi are given following the list of species. Most of the articles cited contain bibliographies so that the references included, though few, will provide a means of exploring the entire field.

Grateful acknowledgment is made to Miss Gertrude Myers, of the Division of Insect Pest Survey and Information, Bureau of Entomology and Plant Quarantine, for checking the scientific names of the insect hosts in order that they might conform to present-day entomological nomenclature. We also appreciate the opportunity of consulting A. T. Speare's index in the Division of Insect Pest Survey and Information on the subject of entomogenous fungi.

An asterisk is used to designate combinations of fungus and host represented by specimens in the mycological collections of the Bureau of Plant Industry.

ACREMONIELLA SP.

Host: Crioceris asparagi (L.)

ACREMONIELLA VERRUCOSA Togn. Rond. R. Ist. Lomb. di Sci.
et Lett. (2 ser.) 29: p. 3
extr. 1896.

Host: Hypera punctata (F.)

Va.*

ACREMONIUM TENUIPTES Petch Brit. Mycol. Soc. Trans. 21:
64-66. 1937.

Syn. Sporotrichum araneorum Cav. Fung. Longob. exsic. No. 240. 1892.

Host: Araneida

Mass.

ACROSTALAGNIUS ALBUS Preuss Linnaea 24: 126. 1851.

Hosts: Aphis sp.

P. R.

Corythaica monacha Stal

Pyrausta nubilalis (Hbn.)

Pa.

Sipha flava (Forbes)

P. R.

ACROSTALAGNIUS APHIDUM Oud. Nederland. Kruidk. Arch. (Ser. 3)
2: p. 759. 1902.

Hosts: Aphis sp.

P. R.,* Fla.*

Aphis gossypii Glov.

Carolinaia cyperi Ainslie

Corythaica monacha Stal

P. R.

Hysteroncaura setariae (Thos.)

P. R.*

Macrosiphoniella sanborni (Gill.)

Ind.

Myzus persicae (Sulz.)

Fla.*

Rhopalosiphum pseudobrassicae (Davis)

Tex.

Rhopalosiphum rufomaculatum (Wilson)

Ind.

Sipha flava (Forbes)

P. R.*

Toxoptera aurantiae (Fonsc.)

Dominican Republic

ALEURODITES WEBBII Fawcett, Mycologia 2: 167. 1910.

Hosts: Aleurodes sp.

Ala.,* Fla.,* La.,*

Costa Rica,* Cuba,*

Dominican Republic.

Aleurocanthus woglumi Ashby

Cuba

Aleurodicus minimus Quaint.

Fla., P. R.

Aleurothrixus howardi (Quaint.)

Fla., P. R.

Dialeurodes citri (Ashm.)

Ala.,* Fla.,* La.,* Miss.*

P. R.

Dialeurodes citrifolii (Morg.)

Fla.

ASCHERSONIA SP.

Hosts: Aleurocanthus woglumi Ashby

Cuba, Dominican Republic

Aleurodes sp.

Cuba, Dominican Republic

Coccus viridis Green

P. R.*

Dialeurodes citri (Ashm.)

Fla., Cuba

Eucalyptatus tessellatus (Sign.)

La.,* P. R.

Locanium nigrofasciatum Perg.

ASCHERSONIA ALEYRODIS Webber U. S. Dept. Agr. Veg. Phys.
& Path. Bul. 13: 21. 1897.

Imperfect stage of Hypocrella libera Syd.

Hosts: Aleurocanthus woglumi Ashby

Fla.,* Costa Rica,
Cuba,* Dominican
Republic, P. R.
Fla.,* Cuba,* P. R.
Cuba,* Panama
P. R.
Jamaica
P. R.*

Aleurodes sp.

Aleurodicus cardini Back

Aleurodicus minimus Quaint.

Aleurodicus pimentae Laing

Aleurothrixus howardi (Quaint.)

Bemisia inconspicua (Quaint.)

Coccidae

C. Z.*

Dialeurodes citrifolii (Morg.)

Fla.

Lecanium sp.

Fla.

Trialeurodes abutilonea (Hald.)

Fla.

Trialeurodes floridensis (Quaint.)

ASCHERSONIA ARISTATA Ell. (Considered pycnidial form of
Hypocrea phyllogena Mont. by
Patouillard in correspondence
2-15-1895.)

Host: Lecanium sp.

Fla.*

ASCHERSONIA AURANTIACA Petch Brit. Mycol. Soc. Trans.
23: 135-6. 1939.

Imperfect stage of Stereocrea aurantiaca Petch

Host: Paraleurodes perscae (Quaint.)

Fla.*

ASCHERSONIA BASICYSTIS Berk. & Curt. Linn. Soc. Jour.
10: 302. 1868.

Imperfect stage of Hypocrella phyllogena (Mont.) Petch

Host: Lecanium sp.

Costa Rica, Cuba,
Jamaica, P. R.

ASCHERSONIA BRUNNEA Petch Paradeniya, Ceylon, Roy. Bot.
Gard. Ann. 7: 251. 1921.

Host: Unidentified hosts

Fla., Costa Rica*

ASCHERSONIA COLUMNIFERA Petch Paradeniya, Ceylon, Roy.
Bot. Gard. Ann. 7: 258. 1921.

Host: Aleurodes sp.

Fla.

ASCHERSONIA CUBENSIS Berk. & Curt. Linn. Soc. Jour.
10: 351. 1868.

Imperfect stage of Hypocrella epiphylla (Mass.) Sacc.

Hosts: Unidentified hosts

Cuba, P. R.*

Aleurocanthus woglumi Ashby

C. Z.

Coccidae

Fla., Dominican
Republic, P. R.*
Costa Rica

Coccus acuminatus (Sign.)

Fla., P. R.

Eucalymnatus tessellatus (Sign.)

Fla.

Lecanium sp.

Lepidosaphes beckii (Newm.)

P. R.

Salisetia hemisphaerica (Targ.)

P. R.

Toumeyella liriiodendri (Gmel.)

Fla.

ASCHERSONIA FLAVO-CITRINA of Fla. not P. Henn. See also
A. goldiana Sacc. & Ell.

Hosts: Aleurodicus minimus Quaint.
 Dialeurodes citri (Ashm.)

P. R.*
 Fla.*

ASCHERSONIA GOLDIANA Sacc. & Ell. Sacc. Syll. 14: 990.
 1899.

Hosts: Aleurodes sp.

Aleurocanthus woglumi Ashby
 Dialeurodes citri (Ashm.)
 Dialeurodes citrifolii (Morg.)

Cuba
 Fla., Costa Rica,*
 P. R.
 Jamaica
 Panama*
 Fla.

ASCHERSONIA TURBINATA Berk. Ann. Nat. Hist. (ser. 2) 9:
 192. 1852.

Imperfect stage of Hypocrella turbinata (Berk.) Petch

Hosts: Aleurocanthus woglumi Ashby
 Ceroplastes sp.
 Ceroplastes floridensis Const.
 Coccidae

P. R.
 P. R.
 Fla.
 Fla.,* La.,* C. Z.,*
 Cuba, Dominican Republic,
 Panama,* P. R.
 La.*
 Fla., La.,* P. R.
 P. R.*

Coccus hesperidum L.
 Lepidosaphes beekii (Newm.)
 Vinsonia stellifera Westw.

ASCHERSONIA VIRIDANS (Berk. & Curt.) Soc. Mycol. de France,
 Pat. Bul. 7: 48. 1891.

Imperfect stage of Hypocrella viridans (Berk. & Curt.) Petch

Host: Aleurodidac

Cuba,* P. R.

ASCHERSONIA ZAMIA Webber (Mss. name)

Host: Diaspis zamiae Morg.

Fla.*

ASPERGILLUS SP.

Host: Harmolita sp.
 Musca domestica L.
 Pseudococcus sp.

Va.
 Tex.
 P. R.

ASPERGILLUS DEPAUPERATUS Petch Brit. Mycol. Soc. Trans. 16:
 244. 1932.

Host: Tetranychus telarius (L.)

Kans.*

ASPERGILLUS EFFUSUS Tiraboschi Ann. di Bot. (Rome) 7: 16. 1908.

Host: Apis mellifera L.

D. C.

ASPERGILLUS FLAVESCENS Bidan See Gee, P. W. and Massey, A. B.,

Aspergillus infecting Malacosoma at high temperatures.

Mycologia 4: 279-281. 1912.

Host: Malacosoma americana (F.)

S. C.

ASPERGILLUS FLAVUS (Group) sensu Thom & Church. The
Aspergilli 198-207. 1926.

- Host: Apion occidentale Fall Mo.*
Apis mellifera L. (widespread) Mich.
Gilpinia polytomum (Htg.)
Microplectron fuscipennis Zett. Maine*
Mordellistena sp. Mo.*
Palaeococcus rosae (R. & H.)
Pseudococcus boninsis (Kuw.) La., Barbados, Cuba,
Dominican Republic, T.R.
Pseudococcus sp. La., Dominican Republic

ASPERGILLUS FLAVUS-ORYZAE sensu Thom & Church The
Aspergilli 198-207. 1926.

- Host: Apis mellifera L. D. C.

ASPERGILLUS FUNIGATUS (Fras.) sensu Thom & Church

- Host: Apis mellifera L. (Imported from Europe)
Aspergillus glaucus (Lk.) See Thom & Church The
Aspergilli 104. 1926.
Host: Apis mellifera L.

ASPERGILLUS FIDULANS (Fidan) Wint. Rabh. Krypt. Flora (2 auf.)
Bd. 1, Abt. 2: 62. 1887.

- Host: Apis mellifera L.

ASPERGILLUS NIGER v. Tiegh. Ann. Sci. Nat. (ser. 8) 5: 240.
1867.

- Syn: Sterigmatozystis nigra v. Tiegh. Soc. Bot. de France
Bul. 24: 102-103. 1877.

- Host: Prodenia sp. Calif.

ASPERGILLUS OCHRACEUS Wilhelm Beitrage z. Kennt. d. Pilzgattung
Aspergillus Inaug. Diss. Strassburg, 66. 1877.

- Host: Apis mellifera L. Conn., D. C.

ASPERGILLUS ORYZAE (Ahlburg) Cohn sensu Thom & Church
The Aspergilli 198-207. 1926.

- Host: Apis mellifera L.

ASPERGILLUS PARASITICUS Speare Hawaiian Sugar Planter's Expt.
Sta. Path. & Phys. ser. Bul. 12:
38. 1912.

- Host: Apis mellifera L. D. C.
Diatraea saccharalis (F.) Cuba*
Microbracon hebetor (Say) Calif.*
Pseudococcus sp. Cuba*
Pseudococcus boninsis (Kuw.)
Pyrausta nubilalis (Hbn.)

ASPERGILLUS SYDOWI (Bainier & Sartory) Thon & Church The
Aspergilli 147-148. 1926.

Syn.: Sterigmatocystis sydowi Bainier & Sartory Ann. Mycol.
11:25-29. 1913.

Host: *Anastrepha serpentina* (Wied.)

Mexico*

ASPERGILLUS TAMARII Kita Centralb. f. Bakt. Par. & Infek.
Abt. II, 37: 433-452. 1913.

Host: *Atta singularis* (Guer.)

Cuba*

ATICHIA DOMINICANA Cotton Kew Bul. 1914: 59. 1914.

Host: *Lepidosaphes beckii* (Hewm.)

Dominican Republic

BEAUVIERIA SP.

Hosts: *Agrotis badinodis* Grote

Agrotis orthogonia Herr.

Carpocapsa pomonella (L.)

Del., Va.*

Chalepus dorsalis Thunb.

Va.*

Feltia annexa (Treit.)

Feltia ducens Walk.

Feltia gladiaria (Morr.)

Heliophila sp.

Dominican Republic

Polia renigera (Steph.)

Prodenia ornithogalli Guen.

BEAUVIERIA BASSIANA (Bals.) Vuill. Soc. Bot. de France

Bul. 59: 34-40. 1912.

Syn.: *Botrytis bassiana* Bals. Linnaea 10: 609. 1835-6.

Sporotrichum larvatum Pk. N. Y. State Mus. Rpt.

32:44. 1879.

Sporotrichum larvicolum Pk. N. Y. State Mus. Bul.

1 (No. 2): 18. 1887. For discussion of this and
the preceding species see Fetch Brit. Mycol. Soc.
Trans. 19: 188-189. 1935.

Sporotrichum antonomophilum Pk. N. Y. State Mus. Rpt.

50: 116. 1897.

Hosts: *Agriotes nancus* (Say)

Maine*

Anopheles quadrimaculatus Say

Fla.*

Anhodius finetarius (L.)

Canada

Automeris sp.

Bombyx mori L.

Dominican Republic

Bruchus pisorum (L.)

Oreg.

Carpocapsa pomonella (L.)

Del., N. Y., Va.*

Cicada sp.

Va.*

Cranbus sp.

Ind.*

Curculio caryae (Horn)

Ala.

Diacrisia virginica (F.)

Colo.

Diatraea crambidoides (Grote)

Ala.

Diatraea saccharalis (F.)

La.*

Dyslobus decoratus (Lec.)

Wash.

Eutotheca rugiceps (Lec.)

Ark.

BEAUVERIA BASSIANA (Continued)

- Hosts: *Heliophila* sp. Dominican Republic
Heliothis armigera (Hbn.) Conn.*
Hypera punctata (F.) Va.*
Hylastinus obscurus (Marsham) Oreg.*
Lepidoptera Va.*
Leptinotarsa decemlineata (Say) Canada
Ligyris gibbosus (Deg.) Ark.*
Magicicada septendecim (L.) Va.*
Nysius ericae (Schill.) D. C.
Popillia japonica Newm. N. J.
Pyrausta nubilalis (Hbn.) Conn., * Mass., Ohio,*
Canada
Scolytus multistriatus (Marsham) N. J.*
Sitona hispidula (F.) Va.*
Staphylinidae Va.*

BEAUVERIA DENSEA (Lk.) Vuill. Soc. Bot. de France Bul.
59: 34-40. 1912.

Syn.: *Sporotrichum densum* Lk. Mag. Ges. naturf.
Freunde Berlin 3: 13. 1809.

Botrytis tenella Delacr. Jour. d'Agr. pratique 165. 1891.

- Hosts: Arachnida
Autographa brassicae (Riley) Md., * Colo.*
Calendra maidis (Chittn.)
Dasychira groenlandica Honeyer
Hadenocercus subterraneus Scudg.
Hymenoptera
Melolontha vulgaris F.
Muscidae Kans.
Phyllophaga fusca (Fröel.)
Tipula infuscata Loew
Tipulidae

BEAUVERIA DORYPHORAE Poisson & Patay Acad. des-Sci. Paris
Compt. Rend. 200: 961.
1935.

Host: *Leptinotarsa decemlineata* (Say) Canada

BEAUVERIA GLOBULIFERA (Speg.) Pic. Montpellier Ecole Natl.
d'Agr. Ann. 13: 121-
248. 1914.

Syn.: *Sporotrichum globuliferum* Speg. Anal. Soc. Sci.
Argentina 9: 278-285. 1880.

- Hosts: *Anthonomus fulvus* (Lec.) Kans.
Aphanus umbrosus (Dist.) Kans.
Aphodius sp. Kans.
Autographa brassicae (Riley) Md., * Colo.*
Blissus lirtus Montd. N. Y.*
Blissus leucopterus (Say) Kans., Mo., Ohio,*
Canada
Camponotus herculeanus pennsylvanicus (Deg.) Kans.

BEAUVERIA GLOBULIFERA (Continued)

Hosts: <i>Carpocapsa pomonella</i> (L.)	Kans.
<i>Ceratomegilla fuscilabris</i> (Muls.)	Kans.
<i>Chaetocnema pulicaria</i> Melsh.	Va.*
Cicadellidae	La.,* P. R.
Coccinellidae	La.
<i>Coccus hesperidum</i> L.	D. C.
<i>Conotrachelus orinaceus</i> Lec.	Kans.
<i>Conotrachelus nenuphar</i> (Hbst.)	Kans.
<i>Corcoris batatas</i> (F.)	P. R.*
<i>Corythucha gossypii</i> (F.)	Kans.
Cucujidae	Kans.
Curculionidae	Kans.
<i>Cylas formicarius</i> (F.)	La., Miss.*
<i>Datana</i> sp.	Kans.
<i>Diabrotica longicornis</i> (Say)	Middle West and East
<i>Diabrotica soror</i> Lec.	
<i>Diabrotica vittata</i> (F.)	
<i>Diapris zamiae</i> Morg.	
<i>Diatraea saccharalis</i> (F.)	Tex.*
<i>Disomycha xanthomelaena</i> (Dalm.)	Kans.
<i>Disomycha pennsylvanica</i> (Ill.)	Ill.
<i>Disomycha triangularis</i> (Say)	Kans.
<i>Dorytomus</i> sp.	Kans.
<i>Drosophila</i> sp.	P. R.
<i>Eryosca</i> sp.	Dominican Republic
<i>Eryosca fabae</i> (Harr.)	
<i>Epicauta lemniscata</i> F.	La.*
<i>Epilachna varivestis</i> Muls.	N. Mex., Va.*
<i>Estigmene acrea</i> (Drury)	Kans.*
Formicidae	Kans.
<i>Galerucella xanthomelaena</i> (Schr.)	Conn., D. C., Va., Wash.
<i>Gryllus</i> sp.	Kans.
<i>Halictus illinoisensis</i> Robts.	Kans.
<i>Heliothus armigera</i> (Hbn.)	Kans.
<i>Hemaris</i> sp.	Kans.
<i>Hippodamia convergens</i> Guer.	Kans.
<i>Hypera punctata</i> (F.)	Utah
<i>Hyphantria</i> sp.	Kans.
<i>Laphygma frugiperda</i> (A. & S.)	Tex.*
<i>Lotia bivittata</i> F.	Kans.
<i>Macronoctua onusta</i> Grote	Wis.
<i>Magicicada septendecim</i> (L.)	
<i>Melanoplus</i> sp.	Kans.
<i>Melanoplus differentialis</i> (Thos.)	Kans.
<i>Melanoplus femur-rubrum</i> (Dog.)	Kans.
<i>Melanoplus mexicanus</i> Sauss.	Kans.
<i>Melanoplus mexicanus spretus</i> (Walsh)	Kans.
<i>Monocrepidius</i> sp.	Kans.
<i>Murgantia histrionica</i> (Hahn)	
<i>Musca domestica</i> L.	Kans.

BEAUVERIA GLOBULIFERA (Continued)

Hosts: Nabis roseipennis Reut.	Kans.
Nysius ericae (Schill.)	Ky.
Olibrus sp.	Kans.
Pagasa fusca (Stein.)	
Parandra brunnea (F.)	
Pentatomidae	Va.,* Kans.
Phalaenidae	Kans.
Phyllophaga sp.	Kans.
Phyllophaga inversa Horn	Kans.
Phymatidae	Kans.
Pieris rapae (L.)	D. C.*
Plusia sp.	Ky.
Polydesmus sp.	
Polygonia interrogationis (F.)	
Protoparce sexta (Johan.)	
Protoparce sp.	Ky.
Pyrausta nubilalis (Hbn.)	Kans., Ga.*
Rodolia cardinalis (Muls.)	Kans., N. Y.*
Samia cecropia (L.)	
Schistocerca americana (Drury)	Ky.
Selenothrips rubrocinctus (Giard)	Dominican Republic
Sitona hispidula (F.)	Va., Md.
Solubea pugnax (F.)	
Sphingidae	Kans.
Staphylinidae	Wash.*
Stilpnotia salicis (L.)	Mass.*
Tenthredinidae	Kans.
Thripidae	P. B.
Thyanta custator (F.)	Kans.
Trichobaris texana Lec.	Kans.
Vespa sp.	

BEAUVERIA MELOLONTHAE (Sacc.) Cif. Estacion Agron. de
Moca Bul. (ser. B. Bot.)
14: 169. 1929.

Syn.: Botrytis melolonthae Sacc. Ann. Mycol. 10: 320. 1912.

Host: Not given Dominican Republic

BEAUVERIA VEXANS (Pettit) Petch Brit. Mycol. Soc. Trans.
10: 240 and 251. 1926.

Syn.: Isaria vexans Pettit N. Y. (Cornell) Agr. Expt.
Sta. Bul. 97: 365-368. 1895.

Hosts: Blicsus leucopterus (Say)
Euphydryas phaeton Drury
Formicidae
Phyllophaga sp.
Pieris rapae (L.)
Schizura concinna (A. & S.)
Thyridopteryx ophemeriformis (Haw.)

N. C.

BOTRYTIS SP.

Host: *Schistocerca paranensis* Burm.

Mexico

Botrytis bassiana Bals. See Beauveria bassiana (Bals.) Vuill.

Botrytis melolonthae Sacc. See Beauveria melolonthae (Sacc.) Cif.

Botrytis rileyi Farl. See Spicaria rileyi (Farl.) Charles

Botrytis tenella Delacr. See Beauveria densa (Lk.) Vuill.

Boudierella coronata Cost. See Entomophthora coronata (Cost.) Kevorkian

CALONECTRIA HIRSUTELLAE Petch Brit. Mycol. Soc. Trans.
21:49. 1937.

Host: Cicadellidae

N. C.

CEPHALOSPORIUM SP.

Hosts: Araneidae

Byturus unicolor Say

Coccidae

Mexico

Wash.*

Fla.,* P. R.

CEPHALOSPORIUM LECANII Zimm. Indische Cult. (Teysmannia)
9:240-243. 1899.

Syn.: Verticillium lecanii (Zimm.) Viegas (Sao Paulo)
Inst. de Cafe Rev. 14:754-772. 1939.

Hosts: *Aspidiotus destructor* Sign.

Dominican Republic,
P. R.

Cerooplastes floridensis Comst.

Coccus hesperidum L.

Coccus mangiferae (Green)

Coccus sp.

Fla., Dominican Republic,
P. R.

Coccus viridis Green

Fla.,* Cuba, Dominican
Republic, P. R.

Icerya purchasi Mask.

Cuba,* P. R.*

Lecanium sp.

Fla.

Lecanium nigrofasciatum Perg.

La.

Protopulvinaria pyriformis (Ckll.)

Pseudaonidia duplex (Ckll.)

La.

Pseudococcus nipae (Mask.)

P. R.

Saissetia hemisphaerica (Targ.)

Dominican Republic,
P. R.*

Saissetia nigra (Nietn.)

Saissetia oleae (Bern.)

P. R.

CEPHALOSPORIUM LONGISPORUM Petch Brit. Mycol. Soc. Trans.
10:171. 1925.

Host: On unidentified host.

P. R.

CLADOBOTRYUM HETEROCLADUM (Penz.) Petch. Brit. Mycol. Soc.
Trans. 16: 233. 1932.
Syn.: Verticillium heterocladum Penz. (non Fawcett) Michelia
2: 462. 1882.

CLADOSPORIUM SP.

Host: Aonidiella aurantii (Mask.)
Aphididae

Calif.*
Calif., D. C., N. C.,
N. Y., Ohio
P. R.*

Asterolecanium bambusae Boisd.
Chauliognathus pennsylvanicus Deg.
Diacrisia virginica (T.)
Dialeurodes citri (Ashm.)
Hormaphis hamamelidis Fitch
Icerya purchasi Mask.
Pseudonidia duplex (Ckll.)
Siphia flava (Forbes)

Colo.
Fla., La.*
Fla.*
La.*
La.*
Cuba,* P. R.

CLADOSPORIUM APHIDIS Thuem. Osterr. Bot. Ztschr. 27:
12. 1877.

Hosts: Aphis sp.

Fla., N. Y., N. C.,
Ohio,* Tex.

Aphis gossypii Glov.
Aphis spiraeicola Patch
Blissus leucopterus (Say)
Brevicoryne brassicae (L.)
Cicadellidae
Icerya purchasi Mask.
Myzus persicae (Sulz.)
Orchestes rufinus Lec.

Calif.,* Colo., P. R.*
Calif.*
Ind.
N. Y.
Costa Rica,* P. R.
Miss.
P. R.
Maine*

CLADOSPORIUM HERBARUM (Pers.) Lk. Mag. Gesell. Naturf.
Freunde Sitzber Ber-
lin 7: 37. 1816.

Syn.: Dematium herbarum Pers. Tent. Disp. Method.
Fung., p. 75. 1797.

Host: Icerya purchasi (Mask.)
Melanocallis caryaefoliae (Davis)

La.*
Ga.

Clavaria brachiata Batsch. See Isaria brachiata (Batsch) Schum.

Clavaria sobolifera Hill. See Cordyceps sobolifera (Hill) Sacc.

Conidiobolus villosus Martin. See Entomophthora coronata (Cost.)
Kovorkian

CORDYCEPS SP.

Hosts: Aecius dorsalis (Say)
Apion sp.
Camponotus abdominalis Roger
Cicadidae

Canada
Mo.

D. C.,* La.*

CORDYCEPS SP. (Continued)

Hosts: Desmoris fulvus (Lec.)	Mo.*
Diatraea saccharalis (F.)	Guadeloupe
Diptera	Ala.,* Mo.*
Epilachna borealis (F.)	
Heliöthis armigera (Hbn.) Immature	Va.*
Micropezidae	Cuba*
Polia legitima (Grote)	
Scapteriscus acletus R. & H.	Fla.,* S. C.*
Sphenophorus sp.	
Tibicen vitripennis (Say)	La.

Cordyceps acicularis Rav. See Ophiocordyceps acicularis (Rav.)
Petch

Cordyceps albella (Berk. & Curt.) Mass. Ann. Bot. 9: 39.
1895. See Penicillium albellum
(Mass.) Petch

Cordyceps albida Berk. & Curt. See Cordyceps albella (Berk.
& Curt.) Mass.

CORDYCEPS AMAZONICA P. Henn. Hedwigia 43: 247. 1904.

Host: Blattidae British Honduras

Cordyceps arachnophila Thax. See Torrubiella gibellulae
Petch

Cordyceps barberi Giard. See Hirsutella barberi (Giard)
Petch

CORDYCEPS BELIZENSIS Mains Mycologia 32: 21. 1940.

Host: Lepidoptera British Honduras

Cordyceps calocercoides Berk. & Curt. See Ophiocordyceps
caloceroides (Berk. & Curt.) Petch

Cordyceps carolinensis Berk. & Rav. See Ophiocordyceps
acicularis (Rav.) Petch

Cordyceps cicadae (Miq.) Mass. See Cordyceps soboliferæ (Hill)
Sacc.

Cordyceps clavulata (Schw.) Ell. & Ev. See Ophiocordyceps
clavulata (Schw.) Petch

Cordyceps cockerellii (Ell. & Ev.) Ell. See Cordyceps sphingum
(Schw.) Berk. & Curt.

CORDYCEPS CURCULIONUM (Tul.) Sacc.

Host: Curculionidae. See Petch Brit. Mycol. Soc. Trans.
21: 39-40. 1937.

Honduras

- CORDYCEPS DIPTERIGENA Berk. & Br. Linn. Soc. Jour. 14:
111. 1873.
Perfect stage of Hymenostilbe dipterigena Patch Brit.
Mycol. Soc. Trans. 16: 212-213.
1932.
Hosts: Muscidae
Miss.,* N. C., Tenn.,
Costa Rica, Panama, P. R.
Cochliomyia macellaria (F.)
Diptera
Drosophila sp.
Mydaea sp. P. R.
- CORDYCEPS DITMARI Quel. Soc. Bot. de France Bul. 24:
317. 1877.
Syn.: C. langloisii Ell. & Ev. North Amer. Pyren., p.
62. 1892.
Hosts: Eumenes sp. La.
Vespula vulgaris L.
- CORDYCEPS ELONGATA Patch Brit. Mycol. Soc. Trans.
21: 34-67. 1937.
Imperfect stage Hirsutella gigantea Patch
Hosts: Aconicta americana (Harr.) N. C., Maine, Tenn.
Lepidoptera British Honduras
- Cordyceps fornicivora Schroot. See Ophiocordyceps
unilateralis (Tul.) Patch
- Cordyceps gigantea (Mont.) Mass. See Isaria gigantea Mont.
- CORDYCEPS GRACILIS Mont. & Dur. Flora Algeria 1: 449. 1846-69.
Hosts: Unidentified hosts Fla.,* Ind., N. Y.
Elateridae Mich.
Lepidoptera Mich.
- CORDYCEPS HESLERI Mains Eliska Mitchell Sci. Soc. Jour.
55: 125. 1939.
Host: Cicada sp. Tenn.
- Cordyceps humberti Robin. See Ophiocordyceps humberti
(Robin) Patch
- CORDYCEPS INSIGNIS Cke. & Rav. Grevillea 12: 38. 1883.
Perfect stage of Hirsutella saussurei (Cke.) Spegare
Host: Coleoptera N. Y.,* S. C.
- CORDYCEPS ISARIOIDES Curt. Ann. Bot. 9: 36. 1895.
Host: Lepidoptera
- Cordyceps langloisii Ell. & Ev. See Cordyceps ditmari Quel.
- CORDYCEPS LLOYDII Fawcett Ann. Nat. Hist. (ser. 5) 18: 316. 1886.
Syn.: Cordyceps sherringtonii Mass. Ann. Bot. 5: 510. 1891.
Perfect stage of Hymenostilbe fornicarum Patch
Host: Carmonotus sp. Panama

- CORDYCEPS MACULARIS (Mains) Mich. Acad. Sci., Arts and
Letters, Mains' Papers 25:
82. 1940.
Syn.: *Ophiocordyceps macularis* Mains Amer. Phil. Soc.
Proc. 74: 269-270. 1934.
Host: Scarabaeidae Mich., N. Y.
- CORDYCEPS MELOLONTHAE (Tul.) Sacc. *Michelia* 1: 320. 1878.
Syn.: *Torrubia melolonthae* Tul. Sel. Fung. Carp. 3: 12. 1865.
Cordyceps rickii Lloyd Mycol. Writings 6: 911-916. 1920.
Hosts: Coleoptera Conn. to Ohio,
Phyllophaga spp. Mass., Mich., Tenn.*
Phyllophaga fusca (Froel.) Ill., Minn.
- CORDYCEPS MICHIGANENSIS Mains Elisha Mitchell Sci. Soc.
Jour. 55: 123. 1939.
Host: Scarabaeidae Mich., N. C., Tenn.,*
Ontario
- CORDYCEPS MILITARIS (L.) Lk. Handb. 3: 347. 1833.
Imperfect stage *Cephalosporium* sp., according to Petch
Brit. Mycol. Soc. Trans.
20: 216-224. 1936.
Syn.: *Clavaria militaris* L. Species Plantarum 1182. 1753.
Torrubia militaris Tul. Sel. Fung. Carp. 3: 6. 1865.
Hosts: *Isia isabella* (A. & S.) Maine, N. H.,
N. J., Pa., Wis.
Lepidoptera Maine, N. C.
Phyllophaga sp. Ill.*
Phyllophaga fervida (F.)
Unidentified hosts Calif., Iowa, Md.,*
Mass., Maine,* Mo.,
N. C.,* N. H.,* S. Dak.,
Tenn.,* Va.,* W. Va.,*
Canada,* P. R.
- CORDYCEPS MONTICOLA Mains Mycologia 32: 310. 1940.
Host: *Gryllotalpa hexadactyla* Perty Tenn.*
- CORDYCEPS MYRMECOPHILA Ces. Bot. Ztschr. 4: 877. 1846.
Hosts: Formicidae Wash.
- CORDYCEPS OPHIOGLOSSOIDES (Ehr. ex Fr.) Lk. Handb. 3: 347.
1833.
Host: Hexapoda
- CORDYCEPS PALUDOSA Mains Mich. Acad. Sci. Papers 25:
83. 1940.
Host: Lepidoptera Mich.

CORDYCEPS PALUSTRIS Berk. & Br. Linn. Soc. Jour. 1:159. 1857.

Host: Coleoptera

S. C.

Cordyceps peltata Wakef. See Orhiocordyceps peltata
(Wakef.) Petch

Cordyceps pistillariaeformis Berk. & Br. See Orhiocordyceps
clavulata (Schw.) Petch

CORDYCEPS PITTIERI Bomm. & Rouss. Soc. Roy. de Bot. de Belg.
Bul. 35: 160. 1896.

Host: Coleoptera

Costa Rica

CORDYCEPS PUIGGARIL Speg. Acad. Nac. de Cien. Cordoba,
Bol. 11: 535. 1889.

Host: Hemiptera

Cordyceps ravenelii Berk. & Curt. See Orhiocordyceps acicularis
(Rav.) Petch

Cordyceps riskii Lloyd. See C. melolonthae (Tul.) Sacc.

Cordyceps sherringii Mass. See Cordyceps lloydii Fawcett

CORDYCEPS SMITHII Mains Elisha Mitchell Sci. Soc. Jour.
55: 127-129. 1939.

Host: Vespa sp.

Tenn.

CORDYCEPS SOBOLIFERA (Hill ex Berk.) Sacc. Michelia 1: 321. 1878.

Perfect stage of Isaria cicadae Miq. Bul. Sci. Phys. & Natur.
Neerlande 1: 85-86. 1838.

Syns: Clavaria sobolifera Hill Roy. Soc. Phil. Trans. 53:
271-4. 1764.

Cordyceps cicadae (Miq.) Mass. Ann. Bot. 9: 38. 1895.

Hosts: Cicada sp.

Cuba*, Dominican
Republic, Mexico*,
West Indies

Coleoptera :

Scarabaeidae

CORDYCEPS SPHECOCOPHALA (Klotzsch) Gke. Vegetable Wasps and
Plant Worms, p. 40. 1892.

Syn.: Sphaeria sphecocophala Klotzsch Hooker's Jour. Bot.
(London) 2: 206. 1843.

Perfect stage of Hymenostilbe spheconhila (Ditm.) Petch

Hosts: Polistes americana (F.)

Polistes lineatus (F.)

Tachytes argentipes Smith

Vespa sp.

P. R.

P. R.

Fla.,* Tenn.,* Cuba,
P. R.,* West Indies

CORDYCEPS SPHINGUM (Schw.) Berk. & Curt. Linn. Soc. Jour.
10: 375. 1868.

Syn.: Torrubia sphingum Tul. Fung. Carp. 3: 12. 1865.
Ophionectria cockerellii Ell. & Ev. Inst. Jamaica
Jour. 1: 141. 1892.

Cordyceps cockerellii (Ell. & Ev.) Ell. Inst.
Jamaica Jour. 1: 180. 1893.

Hosts: *Cocytius antaeus* Drury
Pholus vitis L.
Sphinx sp.
Unidentified larvae

N. C., Tenn.
British Honduras
N. H., N. J. to N. C.,
Tenn., Jamaica

CORDYCEPS STYLOPHORA Berk. & Br. Linn. Soc. Jour. 1: 158.
1857.

Hosts: Carabidae
Coleoptera
Dendroides bicolor Newm.
Elateridae
Unidentified larvae

N. Mex.
Mich., N. Y., S. C., Tenn.
Mich., N. Y., S. C.

CORDYCEPS SUBMILITARIS P. Henn. Hedwigia 36: 222. 1897.

Host: Coleoptera British Honduras

CORDYCEPS SUBSESSILIS Patch Brit. Mycol. Soc. Trans. 21: 39.
1937.

Host: Larvae of Coleoptera N. C., Tenn.

CORDYCEPS SUPERFICIALIS (Pk.) Sacc. Syll. Fung. 2: 574. 1883.

Syn.: Torrubia superficialis Pk. N. Y. State Mus. Rpt. 28:
70. 1875.

Hosts: Coleoptera

Conn., Mass., Mich.,
N. Y., Ontario

Hexapoda

Unidentified larvae

Mass.*

CORDYCEPS THAXTERI Mains Elisha Mitchell Sci. Soc. Jour. 55:
120-121. 1939.

Host: Araneida N. C., Tenn.

Cordyceps unilateralis (Tul.) Sacc. See Ophiocordyceps
unilateralis (Tul.) Patch

CORDYCEPS VARIABILIS Patch Brit. Mycol. Soc. Trans. 21:
142-144. 1937.

Hosts: Coleoptera
Elateridae

Maine, Tenn., Wis.
N. Y.

CORDYCEPS VIPERINA Mains. Mycologia 29: 674-677. 1937.

Host: Coleoptera N. Y., Tenn., Ontario,
Nova Scotia, British Honduras

Cordyceps wittii P. Henn. See Ophiocordyceps caloceroides
(Berk. & Curt.) Petch

Coronium gracilis Petch. See Swicaria gracilis Petch

Corticium Leprieurii Mont. See Septobasidium lepieurii (Mont.)
Pat.

Corticium pannosum Fr. See Septobasidium pannosum (Fr.) Bres.

CYLINDROCOMBA DENDROCTONI Fk. Field Columbian Mus. Pub. 1:
99. 1896.

Host: Dendroctonus frontalis Zimm. W. Va.

Daedalea rhabarbarina Mont. See Septobasidium rhabarbarium
(Mont.) Bres.

DESMIDIOSPORA HERMOCOPHILA Thaxter Bot. Gaz. 16: 203. 1891.

Host: Campanotus herculeanus L. Conn.
Formica sp.

ENTOMOPHTHORACEAE

Recognizing the fact that the present method of separating the genera Empusa and Entomophthora is not satisfactory, it has seemed best to follow Thaxter's assignment of species as given in his monograph of "The Entomophthoraceae of the United States." Thaxter recognized the taxonomic difficulties presented by the family and discussed the subject on pages 152-155.

EMPUSA SP.

Hosts: <u>Aetabia fennica</u> (Tausch.)	Canada
<u>Athiidae</u>	Calif.*
<u>Aphis spiraeicola</u> Patch	Fla.
<u>Autographa brassicae</u> (Riley)	Fla.*
<u>Blacus leucopterus</u> (Say)	Kans.
<u>Camula pallucida</u> (Scudd.)	Canada
<u>Chorizandra auxiliaris</u> (Grote)	Kans.*
<u>Cranbus</u> sp.	Ontario
<u>Diabrotica soror</u> Lec.	
<u>Estigmene acrea</u> (Drury)	
<u>Diptera</u>	Fla.,* Ohio, Pa.*
<u>Lygus communis novascotiensis</u> Knight	Nova Scotia
<u>Peregrinus maidis</u> (Ashm.)	P. R.
<u>Prodenia</u> sp.	
<u>Rhopalosiphum prunifoliae</u> (Fitch)	Ky.
<u>Rhopalosiphum pseudobrassicae</u> (Davis)	Tex.
<u>Scutophaga</u> sp.	Wash.*
<u>Tomasia saccharina</u> Dist.	West Indies

EMPUSA AMERICANA Thax. Boston Soc. Nat. Hist. Mem. 4: 179. 1888.

Hosts: Calliphora sp. Wis.
Calliphora vomitoria (L.) Ala.,* N. C., New Eng.

EMPUSA AMERICANA Thax. (Continued)

Diptera	Conn., * D. C., * N. Y.*
Lucilia caesar (L.)	N. C., New Eng.
Musca domestica L.	N. C., New Eng.
Muscina stabulans (Fall.)	Tenn.*
Phormia regina (Meig.)	Tex.*

EMPUSA APHIDIS Hoffman In Fres. Senckenb. Naturf. Gesell.
Abhandl. 2: 201. 1858.

Hosts: Aphididae	N. Y., Mass.
Aphis sp.	D. C., * Ga., * Maine, Minn., N. C., N. H., N. Y., * Va., * Wis. N. C.*
Aphis forbesi Weed	
Aphis pomi Deg.	
Aphis sambuci L.	
Blissus sp.	Va.
Blissus leucopterus (Say)	Ind., * Kans.
Brevicoryne brassicae (L.)	Ind., * Neb.
Callipterus trifolii Monell	Va.*
Homaphis hamamelidis Fitch	
Macrosiphum allii Jackson	Va.
Macrosiphum lactucae (L.)	Dcl.
Macrosiphum pisi (Kltb.)	Calif., * Oreg., Va., * Wis.
Myzus persicae (Sulz.)	
Periphigus betae Doane	Calif.
Phorodon humuli (Schr.)	
Rhopalosiphum pseudobrassicae (Davis)	

EMPUSA APICULATA Thax. Boston Soc. Nat. Hist. Mem. 4:
163-164. 1888.

Hosts: Deltoidinae	Maine, N. C.
Diptera	Maine, N. C.
Hemiptera	Maine, N. C.
Hyphantria cunea (Drury)	
Hyphantria textor Harr.	Maine, N. C.
Petrophora sp.	Maine, N. C.
Tortrix sp. (adult)	Maine, N. C.
Typhlocyba sp.	Maine, N. C.

EMPUSA APICULATA Thax. var. MAJOR Thax. Boston Soc. Nat.
Hist. Mem. 4: 164-165. 1888.

Hosts: Coleoptera	
Deltoidinae	
Empoasca papayae Oman	P. R.
Hyphantria textor Harr.	Tenn.
Ptilodactyla serricollis (Say)	N.C.

EMPUSA CAROLINIANA Thax. Boston Soc. Nat. Hist. Mem.
4: 167. 1888.

Hosts: Diptera	N. C.
Tipula sp.	N. C.

- EMPUSA CONGLOMERATA (Sor.)? Thax. Boston Soc. Nat. Hist. Mem. 4: 162-163. 1888.
 Hosts: Diptera N. C., N. H.
 Tipulidae N. C., N. H.
- EMPUSA CONICA Now. Acad. Sci. Krakow Proc., 1883: 153.
 Hosts: Diptera N. C., N. H.
 Chironomidae N. C., N. H.
 Chironomus sp.
- EMPUSA CULICIS A. Braun. See Thaxter Boston Soc. Nat. Hist. Mem. 4: 157-158. 1888.
 Hosts: Chironomus sp. Wis.
 Culex sp. Mass., Maine, Mich.,
 N. H.
 Culicidae Maine, Mass., N. H.
 Serratium venustum Say N. H.
- EMPUSA DIPHTEROMMA Thax. Boston Soc. Nat. Hist. Mem. 4: 177. 1888.
 Hosts: Mycetophilidae Maine, Mass., N. C., N. H.
 Diptera
 Tipula sp.
- EMPUSA ECHINOSPORA Thax. Boston Soc. Nat. Hist. Mem. 4: 180-181. 1888.
 Hosts: Diptera Ark.,* N. J.,* Va.*
 Myodorous denticollis (Say) Kans.*
 Sapporiza longipennis (F.) Maine, N. C., N. H.
- EMPUSA ERUPTA Husten Acadian Ent. Soc. Proc. 9: 31. 1924.
 Hosts: Lygus communis novascotiensis Knight Nova Scotia*
 Plagiognathus sp. Nova Scotia
- EMPUSA FRESSENI Now. Acad. Sci. Krakow Proc., 1883: 153.
 Hosts: Aphis pomi Deg. Maine, Mass., N. C.
 Aphis spiraeicola Patch Fla.
 Hemiptera Cuba(?)
 Hexapoda
 Myzus persicae (Sulz.) Fla., P. R.
 Perigrinus maidis (Ashm.)
 Periphyllus lyropictus (Kess.) N. H.*
 Phenacoccus sp. P. R.
 Pseudococcus citri (Risso) La.*
 Pseudococcus nipae (Mask.) P. R.
- EMPUSA GEOMETRALIS Thax. Boston Soc. Nat. Hist. Mem. 4: 170-171. 1888.
 Hosts: Epithecia sp. Maine
 Lepidoptera Maine
 Petrophora sp. Maine
 Thera sp.

EMPUSA GRACILIS Thax. Boston Soc. Nat. Hist. Mem. 4:
185-186. 1888.

Hosts: Diptera

N. C.

EMPUSA GRILLI (Fres.) Now. Acad. Sci. Krakow Proc., 1883: 153.

General distribution.

Conn., D. C.,
Iowa, Maine, Mass.,
N. C., N. H., N. Y.,
Ohio.

Hosts: Agrotis sp.

Arctidae

Camula pellucida (Scudd.)

Ceuthophilus sp.

Diacrisia virginica (F.)

Diptera

Dissosteira carolina (L.)

Draculacephala mollipes (Say)

Estigmene acraea (Drury)

Lyphantria cunea (Drury)

Lyphantria textor Harr.

Isia isabella (A. & S.)

Malacosoma sp.

Malacosoma americana (F.)

Melanoplus sp.

Melanoplus bivittatus (Say)

Melanoplus differentialis (Thos.)

Melanoplus femur-rubrum (Dug.)

Melanoplus mexicanus (Sauss.)

Melanoplus mexicanus spretus (Walsh)

Musca domestica L.

Muscidae

Notolophus antiqua L.

Protoparce sexta (Johan.)

Rhagoletis completa Cress.

Timula flavicans F.

Trimerotropis maritima (Harr.)

Fla.,* Pa.,* Va.*
Canada

Va.*

Maine*

S. Dak.,* Wis., Canada
Minn., Canada
Iowa
Canada
Nev.*

W. Va.

Calif.*
Va.*

EMPUSA LAGENIFORMIS Thax. Boston Soc. Nat. Hist. Mem.
4: 169. 1888.

Hosts: Aphis sp.
Homiptera

Maine, Mass., N. C.

EMPUSA LAMPYRIDARUM Thax. Boston Soc. Nat. Hist. Mem.
4: 169-170. 1888.

Host: Chauliognathus pennsylvanicus Deg.

N. C.

EMPUSA LECANII Zimm.'s Lands. Plantentuin Meded. 44: 25-27.
1901. See Petch Brit. Mycol. Soc.
Trans. 11: 254-256. 1926.

Host: Pseudococcus citri (Risso)

La.

EMPUSA MONTANA Thax. Boston Soc. Nat. Hist. Mem. 4:
180. 1888.

Hosts: Chironomus sp.
Diptera

N. H.

EMPUSA MUSCAE Cohn. Nova Acta Leopoldina 25: 301. 1855.

General in the United States

Hosts: Calliphora vomitoria (L.)

Chlorops assimilis Macq.

Diptera

Drosophila melanogaster Meig.

Drosophila repleta Wollaston

Epeodes volucris O. S.

Kolla similis (Walk.)

Lucilia caesar (L.)

Musca domestica L.

Nev.*

P. R.

D. C., Kans.,* Neb.,*

W. Va.

Oscinis sp.

Polluxia rudis (F.)

Syrphidae

Syrphus sp.

Tachina sp.

W. Va.

EMPUSA OCCIDENTALIS Thax. Boston Soc. Nat. Hist. Mem. 4:
171-172. 1888.

Hosts: Aphididae
Hemiptera

Maine, Mass.

Maine, Mass.

EMPUSA PAPILLATA Thax. Boston Soc. Nat. Hist. Mem. 4:
166-167. 1888.

Host: Diptera

N. C., N. H.

EMPUSA PLANCHONIANA (Cornu) Petch Brit. Mycol. Soc. Trans.
21: 34-36. 1937.

Syn.: Entomophthora planchoniana Cornu Soc. Bot. de France
Bul. 20: 189. 1873.

Host: Aphididae

Wash.

Empusa planchoniana (Cornu) of Thaxter. See E. thaxteriana Petch

EMPUSA RHIZOSPORA Thax. Boston Soc. Nat. Hist. Mem. 4:
183-185. 1888.

Hosts: Neuroptera
Phryganeidae

Maine, N. C.

Maine, N. C., Wis.

EMPUSA SCIARAE Olive Bot. Gaz. 41: 192. 1906.

Host: Sciara sp.

Wis.

EMPUSA SEPULCHRALIS Thax. Boston Soc. Nat. Hist. Mem. 4:
181-182. 1888.

Hosts: Diptera
Tipulidae

N. C., Tenn.

N. C., Tenn.

EMPUSA SPHAEROSPERMA (Fres.) Thax. Boston Soc. Nat. Hist.
Mem. 4: 172-175. 1888.

Syns.: Entomophthora sphaerosperma Fres. Bot. Ztg. 14:
883. 1856.

Entomophthora phytonomi Arthur Bot. Gaz. 11:
14-17. 1886.

Hosts: Agrilus bilineatus (Web.)

Maine, Mass., N. C.,
N. H., N. Y.
Maine

Colias philodice Godart

Culicidae :

Curculionidae

Dissosteira carolina (L.)

Empoasca fabae (Harr.)

Ohio*

Empoasca sp.

Fla.*

Halictus sp.

Hypera nigrirostris (F.)

Hypera postica (Gyll.)

Hypera punctata (F.)

Utah
Calif.,* N. Y.,* Ohio,
Va.*
Fla.*

Ichneumonidae

Lampyridae

Laphygma frugiperda (A. & S.)

P. R.

Lepidoptera

Fla.*

Loxostege sticticalis (L.)

Colo.*

Macrosiphum solanifolii (Ashm.)

Fla.*

Musca sp.

Tenn.

Musca domestica L.

N. H.

Muscidae

Mycetophilidae

Pieris brassicae (L.)

Pieris rapae (L.)

Psylla mali (Schmddp.)

Canada, Nova Scotia

Ptychodes trilineata (L.)

La.*

Phyllophaga sp.

Kans.*

Rhopobota naevana (Hbn.)

Mass.*

Thrips tabaci Lind.

Mass.

Typhlocyba pomaria McAtee

W. Va.*

EMPUSA TENTHREDINIS (Fres.) Thax. Boston Soc. Nat. Hist.
Mem. 4: 162. 1888.

Syn.: Entomophthora tenthredinis Fres. Senckenb. Naturf.
Gesell. Abhandl. 2: 201.
1858.

Hosts: Hymenoptera
Tenthredinidae

Maine

Maine

EMPUSA THAXTERIANA Petch Brit. Mycol. Soc. Trans. 21:

36. 1937.

Syn.: Empusa planchoniana (Cornu) of Thaxter Boston

Soc. Nat. Hist. Mem. 4:

165-166. 1888.

Hosts: Aphis sp.

Hemiptera

Macrosiphum pisi (Kltb.)

Maine, Mass.

Maine, Mass.

Oreg.

EMPUSA VARIABILIS Thax. Boston Soc. Nat. Hist. Mem. 4:

183. 1888.

Hosts: Diptera

Tipulidae

N. C., Canada

EMPUSA VIRESCENS Thax. Boston Soc. Nat. Hist. Mem. 4:

178. 1888.

Hosts: Actebia fennica (Tausch.)

Cirphis unipuncta (Haw.)

Lepidoptera

Canada

ENTOMOPHTHORA SP.

Hosts: Aphidiidae

Pontaria corrugata (Wood)

Forficula sp.

Harmolita tritici (Fitch)

Hylotoma berberidis (Schr.)

Morellia scapulata (Bigot)

Porthetria dispar (L.)

Pseudococcus sp.

Nev.*

Md.

Cuba*

P. R.*

La.*

ENTOMOPHTHORA ANISOPLIAE Metsch. See Metarrhizium anisopliae

(Metsch.) Sor.

ENTOMOPHTHORA APPROPHORAE Rost. (?) Bot. Tidsskr. 20: 128.

1896; Petch, Brit. Mycol.

Soc. Trans. 19: 179-180.

1935.

Host: Aphrophora parallela (Say)

Pa.*

ENTOMOPHTHORA AULICAE (Reich.) Wint. In Rabh. Kryptogam. (2

auf.) bd. 1, abt. 1: 78.

1884.

Hosts: Agrotis sp.

Amphipyra pyramidoides Guen.

Catocala sp.

Diacrisia virginica (F.)

Estigmene acraea (Drury)

Euchaetia segle Drury

Hyphantria textor Harr.

Isia isabella (A. & S.)

Lepidoptera

Malacosoma americana (F.)

ENTOMOPHTHORA AULICAE (Reich.) (Continued)

Hosts: *Notolophus antiqua* (L.)
Pachysphinx modesta Harr.
Peridroma margaritosa (Haw.)
Protoparce sexta (Johan.) Calif.

Hosts of *Empusa grylli* Fres., considered as a synonym by some authorities, are excluded. See Thaxter, p. 159.

ENTOMOPHTHORA BULLATA Thax. ined., *Povah* Mich. Acad. Sci.,
 Arts. and Letters.
 Papers. 20: 120. 1935.

Hosts: *Calliphora* sp. Mich.
Cochliomyia macellaria (F.) Det. by E. W. Laake, Nov.,
 1935. Ga.*

ENTOMOPHTHORA CHROMAPHIDIS Burger & Swain Jour. Econ. Ent.
 2: 288. 1918.

Hosts: *Chromaphis juglandicola* (Kltb.) Calif.
Psocus sp. Calif.

ENTOMOPHTHORA CORONATA (Cost.) Kevorkian Puerto Rico Univ.
 Jour. Agr. 21:
 191-198. 1937.

Syn.: *Boudierella coronata* Cost. Soc. Mycol. de France
 Bul. 13: 38-43. 1897.
Conidiobolus villosus Martin Bot. Gaz. 80: 311-318.
 1925.

Host: *Nasutitermes* sp. P. R.

ENTOMOPHTHORA FORFICULAE Giard Bul. Sci. de la France et
 Belg. 20: 211-212. 1889.

Host: *Forficula auricularia* L. Wash.*

ENTOMOPHTHORA FUMOSA Speare U. S. Dept. Agr. Bul. 1117:
 6. 1922.

Hosts: *Phenacoccus* sp.
Pseudococcus citri (Risso) Fla.*

Entomophthora phytonomi Arthur See *Empusa sphaerosperma* (Fres.)
 Thax.

Entomophthora planchoniana Cornu See *Empusa planchoniana*
 (Cornu) Petch

Entomophthora sphaerosperma Fres. See *Empusa sphaerosperma*
 (Fres.) Thax.

EUROTIIUM SP.

Host: Chalcididae

FUMAGO VAGANS Pers. Mycol. Europe 1: 9. 1822; Sacc. Syll.
 Fungorum 4: 547. 1886.

Host: Honeydew of Aphididae Tex.

FUSARIUM SP.

Hosts:	<i>Agrotis ypsilon</i> (Rott.)	Ill.
	<i>Anastrepha mombinpraeoptans</i> Sein	Fla.*
	<i>Anticarsia gemmatilis</i> (Hbn.)	Fla.*
	<i>Aphis gossypii</i> Glov.	Colo.
	<i>Aspidiotus perniciosus</i> Comst.	Miss.*
	<i>Brachyrhinus sulcatus</i> (F.)	Pa.
	<i>Campeocapsa pomonella</i> (L.)	N. Y.*
	<i>Chauliognathus pennsylvanicus</i> Deg.	Wash.
	Coccinellidae	Ga.*
	<i>Colias eurytheme</i> Bdw.	
	<i>Conopia exitiosa</i> (Say)	Ga.*
	<i>Crynoides devastator</i> (Brace)	Ill.
	<i>Cylas formicarius</i> (F.)	Miss.*
	<i>Diatraea</i> sp.	Cuba*
	<i>Diatraea saccharalis</i> (F.)	
	Diptera	
	<i>Feltia subgothica</i> (Haw.)	Mo.*
	<i>Harmolita</i> sp.	Va.*
	<i>Heliothis armigera</i> (Hbn.)	Conn.*
	<i>Hypoderma bovis</i> (Deg.)	N. Dak.*
	<i>Hypoderma lineatum</i> (DeVill.)	Fla., Iowa, N. Dak.
	Lepidoptera	Va.
	<i>Magiciocada septendecim</i> (L.)	D. C.,* Va.*
	<i>Nephelodes emmedonia</i> (Crap.)	Ill.
	<i>Oscinella frit</i> (L.)	Fla.
	<i>Prodenia praefica</i> Grote	Calif.*
	<i>Sternechus paludatus</i> Casey	N. Mex.*
	<i>Zonosemata electa</i> (Say)	N. J.

FUSARIUM ALEYRODIS Petch Brit. Mycol. Soc. Trans. 7:
156 and 164. 1921.

Hosts:	<i>Dialeurodes citri</i> (Ashm.)	Fla.
	<i>Lepidosaphes beckii</i> (Newm.)	

FUSARIUM EPICOCUM McAlp. Fungus diseases of citrus trees in
Australia, 113. 1899; Petch, Brit.
Mycol. Soc. Trans. 7: 164. 1921.

Syns.: Microcera parlatoriae Trabut Bul. Agr. 1^{er} Algerie
Tunis 1332. 1907.

Microcera curta Sacc. Ann. Mycol. 7: 437. 1909.

Microcera tonduzii Pat. Soc. Mycol. de France
Bul. 28: 142. 1912.

Host: *Aspidiotus* sp. Costa Rica

FUSARIUM LARVARUM Fekl. Mycol. Synb. 369. 1869.

Host: *Diatraea* sp.

FUSARIUM MURISMOIDES Oda. Icon. Fung. 2: 4. 1838.

Host: *Heliothis* sp. Kans.

FUSARIUM POAE (Pk.) Wr. In Wollenweber and Reinking Die
Fusarien, p. 47. 1935.

Syn.: Snorotrichum poae Pk. N. Y. State Mus. Bul. 67:
29. 1903.

Host: Musca domestica L.

Canada

FUSARIUM SOLANI (Mort.) App. & Wr. var. minus Wr. In
Wollenweber & Reinking
Die Fusarien, p. 13. 1935.

Host: Cylas formicarius (F.)

Lo.*

Gibellula arachnophila Vuill. See G. araneorum (Schw.) Syd.

GIBELLULA ARANEORUM (Schw.) Syd. Ann. Mycol. 30: 390-391. 1932.

Syns.: Isaria araneorum Schw. Naturf. Gesell. zu Leipzig
1: 126. 1822.

Isaria aspergilliformis Rostrup Vidensk. Medd.
Naturhist. For. Kjobenhavn
45: 92. 1893.

Gibellula arachnophila Vuill. Soc. Mycol. de France
Bul. 27: 80. 1911.

Gibellula suffulta Speare Phytopathology 2: 137.
1912.

Imperfect stage of Torrubiella gibellulae (Schw.)
Petch

Hosts: Araneida

Mexico, N. H.,* N. Y.,*
Va.,* Vt.,* P. R.*

Attidae

Gibellula capillaris Morgan (Type of this species does not
belong in this genus.)

Gibellula suffulta Speare See G. araneorum (Schw.) Syd.

Glenospora curtisii Berk. & Desmaz. See Septobasidium
curtisii (Berk. & Desmaz.)
Boed. & Stein.

Helicobasidium arboreum Couch See Septobasidium arboreum
(Couch) Boed. & Stein.

HIRSUTELLA SP.

Hosts: Diatraea saccharalis (F.)
Eucosma glomerana (Wlsm.)
Pyrausta nubilalis (Lbn.)
Tropaea luna (L.)
Vespidae

Cuba*
Miss.*
Ohio
Fla.*
P. R.

HIRSUTELLA BARBERI (Giard) Petch. Brit. Mycol. Soc. Trans.

21: 57-58. 1937.

Syn.: Isaria barberi Giard Biol. Soc. Compt. Rend. 46:
823. 1894.

Cordyceps barberi Giard Ann. Bot. 9: 18. 1895.

Hosts: Diatraea saccharalis (F.)

La.,* Barbados,
Dominican Republic,
Jamaica,* P. R.
P. R.

Diatraea lineolata Walk.

HIRSUTELLA CITRIFORMIS Speare Mycologia 12: 70. 1920.

Hosts: Fulgoridae
Hymenoptera

P. R.
Costa Rica*

HIRSUTELLA FLOCCOSA Speare Mycologia 12: 69. 1920.

Host: Peregrinus maidis (Ashm.)

Jamaica

HIRSUTELLA GIGANTEA Petch Brit. Mycol. Soc. Trans. 21:

48. 1937.

Imperfect stage of Cordyceps elongata Petch

Host: Acronicta americana (Harr.)

Conn., Maine, N. H.

HIRSUTELLA LECANIICOLA (Jaap) Petch Brit. Mycol. Soc.

Trans. 18: 53. 1933.

Syn.: Isaria lecaniicola Jaap Bot. Ver. der Brandonb.
Verhandl. 50: 49, 1908.

Imperfect stage of Ophiocordyceps clavulata (Schw.) Petch

Hosts: Coccidae

D. C., Fla., Md.,
N. Y., Vt.,* Va.

Locanium corni Boucho

HIRSUTELLA SAUSSUREI (Cke.) Speare Mycologia 12: 69. 1912.

Syn.: Isaria saussurei Cke. Vegetable Wasps and Plant
Worms, p. 53. 1892.

Imperfect stage of Ophiocordyceps humberti (Robin) Petch

Hosts: Bothriocera sp.

Va.*

Polistes americana (F.).

Polistes annularis (L.)

Polistes sp.

Vespidae

N. C.
Calif.
Mexico,* Panama,* P. R.*

HIRSUTELLA SUBULATA Petch The Naturalist 1932:

45-49. 1932.

Hosts: Conopia pyri (Harr.)

Carnocapsa pomonella (L.)

N. Y., Va.
Del., D. C., Ind.,* Va.*

HORMODENDRON SP.

Hosts: Coccidae

Selenaspidus articulatus (Morg.)

Barbados
Barbados

Hymenochaete septobasidioides P. Henn. See Septobasidium septobasidioides (P. Henn.) Lloyd

Hymenochaete siparia Berk. & Curt. See Septobasidium siparium (Berk. & Curt.) Bres.

HYMENOSTILBE AMPULLIFERA Petch Brit. Mycol. Soc. Trans. 21: 56. 1937.

Host: Dicranomyia pubipennis O. S.

N. C.

HYMENOSTILBE ARACHNOPHILA (Ditm.) Petch The Naturalist 1931: 249. 1931.

Syn.: Isaria arachnophila Ditm. In Sturm Deutschlands Flora (abt. 3) 1: 111. 1817.

Host: Araneida

HYMENOSTILBE DIPTERIGENA Petch Brit. Mycol. Soc. Trans. 16: 212-213. 1932.

Imperfect stage of Cordyceps dipterigena Berk. & Br.

Host: Diptera

Panama

HYMENOSTILBE FORMICARUM Petch Brit. Mycol. Soc. Trans. 16: 218. 1932.

Imperfect stage of Cordyceps lloydii Fawcett

Host: Formicidae

Panama

HYMENOSTILBE SPHECOPHILA (Ditm.) Petch Brit. Mycol. Soc. Trans. 21: 54-55. 1937.

Syn.: Isaria sphecophila Ditm. In Sturm Deutschlands Flora (abt. 3) 1: 115. 1817.

Imperfect stage of Cordyceps sphecocephala (Klotzsch) Cke. Vespidae

P. R.

HYMENOSTILBE SPHINGUM (Schw.) Petch Brit. Mycol. Soc. Trans. 16: 217. 1932.

Syn.: Isaria sphingum Schw. Naturf. Gesell. zu Leipzig 1: 126. 1822.

Imperfect stage of Cordyceps sphingum (Schw.) Berk. & Curt.

Hosts: Erinnyis alope (Drury)

Sphingidae

Sphinx sp.

Unidentified hosts.

P. R.

N. C., Tenn.

Hypocrea phyllogena Mont. See Hypocrella phyllogena (Mont.) Petch

Hypocrea viridans Berk. & Curt. See Hypocrella viridans (Berk. & Curt.) Petch

HYPOCRELLA SP.

Hosts: *Coccus acuminatus* (Sign.)
Dialeurodes citri (Ashm.)

Honduras, P. R.
P. R.*

HYPOCRELLA CAULIUM (Berk. & Curt.) Soc. Mycol. de France

Pat. Bul. 30: 346. 1914.

Syn.: *Corticium caulium* Berk. & Curt. Acad. Sci. Jour.
2: 279. 1853.

Host: Coccidae

Costa Rica,* Honduras,
Panama,* P. R.

HYPOCRELLA DISJUNCTA Seaver Mycologia 12: 93-98. 1920.

Syn.: *Hypocrella phyllogena* (Mont.) Spog.(?) See Petch
Brit. Mycol. Soc. Trans.
10: 194. 1925.

Host: *Dialeurodes citri* (Ashm.)
Lecanium sp. (according to Petch)

P. R.
P. R.

HYPOCRELLA EPIPHYLLA (Mass.) Sacc. Syll. Fung. 11: 368. 1892.

Syn.: *Hypocrea epiphylla* Mass. Jour. Bot. 30: 164. 1892.

Perfect stage of *Aschersonia cubensis* Berk. & Curt.

Host: *Ceroplastes floridensis* Const.

Coccus hesperidum L.

Coccus mangiferae (Gredn)

Eriococcinae

Eucalymnatus tessellatus (Sign.)

Lecanium sp.

Lepidosaphes beckii (Nown.)

Protopulvinaria pyriformis (Oehl.)

Saissetia hemisphaerica (Targ.)

Toumeyella liriodendri (Gmel.)

Fla.

Fla.

HYPOCRELLA LIBERA Syd. Ann. Mycol. 14: 85. 1916.

Syn.: *Hypocrella nectrioides* Thax. in litt. See Petch

Brit. Mycol. Soc. Trans. 10: 191-193.
1925.

Perfect stage of *Aschersonia aleyrodis* Webber

Hosts: Coccidae

Dominican Republic, Panama

Hypocrella nectrioides Thax. in litt. See *Hypocrella libera* Syd.

HYPOCRELLA PHYLLOGENA (Mont.) Petch Peradeniya, Ceylon, Roy.

Bot. Gard. Ann. 7: 226-232.
1921.

Syn.: *Hypocrea phyllogena* Mont. Ann. Sci. Nat. (ser. 2) 13:
340. 1840.

Perfect stage of *Aschersonia basicystis* Berk. & Curt.

Hosts: Aleurodes sp.

Dialeurodes citri (Ashm.)

P. R.

HYPOCRELLA TANONIAE Earle Mycologia 2: 87. 1910.

Host: Coccidae

P. R.

HYPOCRELLA TURBINATA (Berk.) Petch Peradeniya, Ceylon,
Roy. Bot. Gard. Ann.
5: 535. 1914.

Perfect stage of Aschersonia turbinata Berk.

Hosts: Ceroplastes sp.
Ceroplastes floridensis Comst.
Coccidae

Fla.
Fla.
C. Z.,* Costa Rica,
Dominican Republic, P. R.
West Indies

Coccus mangiferae (Green)
Lepidosaphes beckii (Newm.)

Hypocrella vilis Syd. See Noctria vilis (Syd.) Petch

HYPOCRELLA VIRIDANS (Berk. & Curt.) Petch Peradeniya,
Ceylon, Roy. Bot.
Gard. Ann. 7: 236-237.
1921.

Syn.: Hypocrea viridans Berk. & Curt. Linn. Soc. Jour.
10: 376. 1868.

Perfect stage of Aschersonia viridans (Berk. & Curt.) Pat.

This species is collected most frequently in the imperfect stage.

ISARIA SP.

Hosts: Unidentified hosts
Carpocapsa pomonella (L.)
Epilachna varivestis Muls.
Grapholitha molesta (Busck)
Heliothis armigera (Hbn.)
Ormenis marginata Brunnich
Phalaenidae
Pseudococcus boninsis (Kuw.)
Saissetia oleae (Bern.)
Stilpnotia salicis (L.)
Vespa sp.

N. C.,* Va.*
N. Mex.*
N. J.,* Ohio*
N. Mex.*
P. R.*
Va.
P. R.*
N. C.,* Va.*

Isaria arbuscula Hariot. See Isaria cicadae Miq.

Isaria arachnophila Ditm. See Hymenostilbe arachnophila (Ditm.) Petch

Isaria araneorum Schw. See Gibellula araneorum (Schw.) Syd.

Isaria aspergilliformis Rostrup. See Gibellula araneorum (Schw.) Syd.

ISARIA ATYPICOLA Yasuda Bot. Mag. (Tokyo) 31: 208-9.
1917; Petch, Brit. Mycol. Soc.
Trans. 23: 139-40. 1939.

Host: Araneida

Costa Rica

Isaria barberi Giard. See Hirsutella barberi (Giard) Petch

ISARIA BRACHIATA (Batsch) Schum. Enum. Plant. Saellandiae

2: 443. 1803.

Syn.: Clavaria brachiata Batsch. Elench. Fung. (Sup. 1),
p. 233. 1786.

Hosts: Aronicta americana (Harr.)
Cicadellidae
Coleoptera

Maine
Tenn.
Tenn.

ISARIA CICADAE Miq. Sci. Phys. and Natur. Neerlande Bul.

1: 85-86. 1838.

Syn.: Isaria arbuscula Hariot Soc. Mycol. France Bul.
8: 67. 1892.

Isaria sinclairii (Berk.) Petch Brit. Mycol. Soc.
Trans. 10: 39. 1924.

Imperfect stage of Cordyceps scabulifera (Will.) Sacc.

For synonymy see Petch
Brit. Mycol. Soc.
Trans. 18: 65. 1933.

Hosts: Cicada sp.

Mexico,* Cuba*

ISARIA CRASSA Pers.(?) Syn. 687. 1801.

Host: Hexapoda

Isaria densa (Lk.) Fr. See Beauveria densa (Lk.) Vuill.

Isaria destructor Metsch. See Mettarrhizium anisopliae
(Metsch.) Sor.

ISARIA DUSSII Pat. Soc. Mycol. de France Bul. 16: 187. 1900.

Host: Hexapoda

Lepidoptera

Guadeloupe

Isaria farinosa (Dicks.) Fr. See Spicaria farinosa (Fr.) Vuill.

Isaria floccosa Berk. & Br. See Hirsutella subulata Petch

ISARIA FURCATA Schw. Amer. Phil. Soc. Trans. 4 (n. ser.):
305. 1832.

Hosts: Hexapoda

Lepidoptera

Pa.

ISARIA GIGANTEA Mont. = Cordyceps gigantea (Mont.) Mass.

Ann. Bot. 9: 1-44. 1895.

"Only imperfect stage known." Massee

Host: Mygale cubana Walk.

Cuba

Isaria lecanicola Jaap. See Hirsutella lecanicola (Jaap) Petch

ISARIA NIGRIFES Schw. Amer. Phil. Soc. Trans. 4 (n. ser.):

305. 1832.

Hosts: Undetermined host
Lepidoptera

Mass.

ISARIA PATTERSONIAE Mass. Kew Bul., Misc. Inf. 1912:

358. 1912.

Hosts: Dysdercus sp.
Mezera viridula (L.)

St. Vincent

ISARIA RITCHIEI Lloyd Mycol. Writings 5: 855. 1919.

Host: Melolontha sp.

Jamaica

Isaria saussurei Cke. See Hirsutella saussurei (Cke.) Speare

Isaria sinclairii (Berk.) Petch. See Isaria cicadae Miq.

Isaria sphacophila Ditm. See Hymenostilbe sphacophila (Ditm.) Petch

Isaria sphingum Schw. See Hymenostilbe sphingum (Schw.) Petch

ISARIA TENUIPES Pk. N. Y. State Mus. Rpt. 31: 44. 1879.

Hosts: Arctiidae (dead pupae)
Hexapoda

N. Y.

ISARIA TOMICII Luggar Minn. Agr. Expt. Sta. Bul. 43: 127. 1895.

Host: Tomicus sp.

Minn.

ISARIA VEXANS Pettit See Beauveria vexans (Pettit) Petch

Knyaria coccicola (Stevenson) Cif. See Tubercularia coccicola
Stevenson

MACROSPORIUM SP.

Hosts: Chauliognathus pennsylvanicus Deg.
Diacrisia virginica (F.)
Myzus persicae (Sulz.)

Wash.
Colo.*

MASSOSPORA CICADINA Pk. N. Y. State Mus. Rpt. 31: 44. 1879.

Host: Magicicada septendecim (L.)

D. C.,* Ill.,
Md.,* Mich., N. J.,
N. Mex.,* N. Y., Ohio,
Tex., Va.*

METARRHIZIUM ANISOPLIAE (Metsch.) Sor. Ztschr. Kais.

Landw. f. Neurussland,
Odessa, p. 268. 1879.

Syns.: Entomophthora anisopline Metsch. Ztschr. Kais.

Landw. Gesell. f.
Neurussland, Odessa, pp.
21-50. 1879.

Syns.: Isaria destructor Metsch. Carus Zool. Anz. 3:
44-47. 1880.

Oospora destructor (Metsch.) Delacr. Soc. Mycol.
de France Bul. 9: 260-264.
1893.

Penicillium anisopliae (Metsch.) Vuill. Soc. Mycol.
de France Bul. 20: 214-221.
1904.

Hosts:	<u>Agriotes mancus</u> (Say)	Maine,* Nova Scot
	<u>Anisoplia austriaca</u> Hbst.	P.
	<u>Aphodius</u> sp.	
	<u>Bembecia marginata</u> (Harr.)	Was
	<u>Blattidae</u>	
	<u>Bombyx mori</u> L.	N.
	<u>Byturus unicolor</u> Say	
	<u>Canthon</u> sp.	
	<u>Cardiophorus</u> sp.	
	<u>Chalcodermus aeneus</u> Boh.	Ga
	<u>Chironomus</u> sp.	Va
	<u>Cicadellidae</u>	
	<u>Coleoptera</u>	Canal Zor
	<u>Cotinis nitida</u> (L.)	Al
	<u>Cryptocercus</u> sp.	
	<u>Cryptocercus punctulatus</u> Scudd.	Me
	<u>Curculio caryae</u> (Horn)	Al
	<u>Desmoris fulvus</u> (Lec.)	
	<u>Diabrotica longicornis</u> (Say)	Il
	<u>Diacrisia virginica</u> (F.)	Col
	<u>Diaprepes abbreviatus</u> L.	P. I
	<u>Dynastinae</u>	
	<u>Elateridae</u>	Or
	<u>Epilachna</u> sp.	Oh
	<u>Eleodes</u> sp.	
	<u>Forficula auricularia</u> L.	Wash
	<u>Forficulidae</u>	
	<u>Heliothis armigera</u> (Hbn.)	N. J., Va
	<u>Hypera nigrirostris</u> (F.)	Va
	<u>Hypera postica</u> (Gyll.)	
	<u>Hypera punctata</u> (F.)	Va
	<u>Lepidoptera</u>	S. Da
	<u>Ligyris tumulosus</u> Burm.	P.
	<u>Limonius californicus</u> (Mann.)	
	<u>Ludius cylindriciformis</u> (Hbst.)	Main
	<u>Metanasius hemipterus</u> (L.)	P.
	<u>Monocrepidius lividus</u> (Deg.)	Pa
	<u>Ormenis pygmaea</u> F.	P.
	<u>Pantonomus leucoloma</u> (Boh.)	Al
	<u>Phyllophaga</u> sp.	Maine, N. C., P.
	<u>Phyllophaga anxia</u> Lec.	Can
	<u>Phyllophaga citri</u> Smyth	P.

METARRHIZIUM ANISOPLIAE (Continued)

Hosts: Phyllophaga drakii Kby.	
Phyllophaga fusca (Froel.)	Canada
Phyllophaga futilis Lec.	
Phyllophaga guahicana Smyth	P. R.
Phyllophaga portoricensis Smyth	P. R.
Phyllophaga rugosa (Melsh.)	Canada
Phyllophaga vandinei Smyth	P. R.
Phytalus apicalis Blanch.	P. R.
Popillia japonica Newm.	N. J., Pa.
Rhagoletis completa Cress.	Calif.
Samia cecropia (L.)	
Scapteriscus acletus R. & H.	Fla.
Scarabaeidae	P. R.
Strataegus sp.	P. R.
Strataegus barbigerus Chapin	P. R.
Strataegus quadrioveatus Beauv.	P. R.
Tenebrionidae	Pa.*
Tiphia inornata Say	P. R.
Tomaspis postica (Walk.)	
Tomaspis saccharina Dist.	West Indies

METARRHIZIUM ANISOPLIAE f. MAJOR Johnston P. R. Insular
Expt. Sta. Bul.
10: 26. 1915.

Host: Magicicada septendecim (L.) D. C., Md., Va.*

METARRHIZIUM BRUNNEUM Patch (?) Brit. Mycol. Soc. Trans.
19: 189. 1935.

Host: Limonius infuscatus Mots. Oreg.*

MICROCERA SP.

Hosts: Aonidia bullata Green	
Aonidia crenulata Green	
Aspidiotus canelliae Sign.	
Chrysomphalus dictyospermi (Morg.)	Honduras
Dialeurodes citri (Ashm.)	
Dialeurodes citrifolii (Morg.)	
Lepidosaphes beckii (Newm.)	Fla., Panama*

MICROCERA AURANTIICOLA Patch Brit. Mycol. Soc. Trans.
7: 158-159. 1921.

Imperfect stage of Sphaerostilbe aurantiicola (Berk.
& Br.) Patch

Hosts: Unidentified hosts	Fla., Ga.
Aspidiotus sp.	Dominican Republic
Chrysomphalus aonidum (L.)	Fla.
Lepidosaphes beckii (Newm.)	Fla.

MICROCERA COCCOPHILA Desm. Ann. Sci. Nat. (ser. 3)

10: 539. 1848.

Imperfect stage of Sphaerostilbe flammea Tul.

Hosts: Unidentified hosts

Fla., Ga., La., Mass.,
Pa., S. C., Tex., Cuba,
P. R.

Aonidiella aurantii (Mask.)

Aspidiotus perniciosus Comst.

Chrysomphalus aonidum (L.)

La.*

Chrysomphalus dictyospermi (Morg.)

La.*

Chrysomphalus tenebricosus (Comst.)

Va.*

Fiorinia fioriniae (Targ.)

Ischnaspis longirostris (Sign.)

Lepidosaphes beckii (Newm.)

Fla., La.*

Lepidosaphes gloverii (Pack.)

Lepidosaphes lasianthis (Green)

Lepidosaphes pallida (Green)

Pseudaonidea duplex (Ckll.)

La.

Selenaspidis articulatus (Morg.)

Microcera curta Sacc. See Fusarium epicoccum McAlp.

MICROCERA FUJIKUROI Miyabe & Sawada Tohoku Imp. Univ.

Col. Agr. Jour. Sapporo

5: 83-84. 1913.

Syn.: Pseudomicrocera henningsii (Koord.) Petch Brit.

Mycol. Soc. Trans. 7:

100-106. 1921.

Imperfect stage of Nectria diploa Berk. & Curt.

Hosts: Aonidiella aurantii (Mask.)

Aspidiotus sp. (Sec. Petch)

Chrysomphalus aonidum (L.)

Fla., P. R.

Chrysomphalus obscurus (Comst.)

Fla.

Chrysomphalus tenebricosus (Comst.)

Fla.

Coccidae

P. R.

Ischnaspis longirostris (Sign.)

P. R.*

Lepidosaphes beckii (Newm.)

Fla., P. R.

Selenaspidis articulatus (Morg.)

P. R.

Microcera parlatoria E. Trabut. See Fusarium epicoccum McAlp.

Microcera rectispora Cke. & Mass. See Tetracrium coccicolum
Hoehn.

Microcera tonduzii Pat. See Fusarium epicoccum McAlp.

MONILIA PENICILLIOIDES Delacr. Soc. Mycol. de France,
Bul. 13: 114. 1897.

Host: Scarabacidae

MONILIOPSIS RIGIDA Patch Brit. Mycol. Soc. Trans. 11:
258. 1926.

Host: Acarina

Fla.*

MUCOR SP.

Hosts: Anastrepha mombinpraeoptans Sein
Magicicada septendecim (L.)

Fla.*

Va.*

MUCOR RACEMOSUS Fres. Beitr. Mykol., p. 12. 1850.

Hosts: Acrididae?

Anastrepha ludens (Loew)

Mexico*

MYRIANGIUM ^{1/} ASTERINOSPORUM (Ell. & Ev.) Miller, Mycologia
32: 593. 1940.

Syn.: Cenangium asterinosporum Ell. & Ev. Torrey Bot.

Club Bul. 10: 76. 1883.

Host: Coccidae

Ala., Conn., Ga.,
Iowa, Md., Mass., N. C.,
N. J., * N. Y., Pa., W. Va.,
Canada

Myriangium curtisii Mont. & Berk. See M. duriaei
Mont. & Berk.

MYRIANGIUM DURIAEI Mont. & Berk. Journ. Bot. [London]
4: 72. 1845.

Syn.: Myriangium curtisii Mont. & Berk. Ann. Sci.
Nat. (ser. 3) 11:
245. 1849.

Hosts: Aspidiotus perniciosus Comst.

Fla.

Aulacaspis pentagona (Targ.)

Fla.

Chionaspis sp.

Va.*

Chionaspis citri Comst.

Fla., * Cuba, * P. R.

Chionaspis sylvatica Sanders

Chrysomphalus obscurus Comst.

La.*

Coccidae

Ala., * Calif., * Del.,
Fla., * Ga., Md., * Miss., *
Mo., N. C., * N. Y., * Pa., *
S. C., S. Dak., Tenn., Va., *
W. Va., * Cuba, Canada, Dominican
Republic, Isle of Pines, Panama
Fla., Barbados, Dominican
Republic, P. R.
P. R.

Howardia biclavis (Comst.)

Lepidosaphes beckii (Newn.)

Lepidosaphes gloverii (Pack.)

Lepidosaphes ulmi (L.)

Odonaspis pimentae Newst.

Jamaica

Parlatoria pergandii Comst.

^{1/} The taxonomy observed in this genus is that followed by Miller in his monograph on "The genus Myriangium in North America."

MYRIANGIUM FLORIDANUM Hoehn. Akad. der Wiss. Wien, Math.-
Nat. Kl. Sitzber. 118: 354. 1909.

Hosts: Chionaspis citri Comst.

Fla.,* Mo.,
Cuba*

Coccidae

Ala., Fla., La., Miss.,
Cuba, P. R.
Ala., Fla.

Lepidosaphes beckii (Newm.)

MYRIANGIUM TUBERCULANS Miles Mycologia 14: 80. 1922.

Host: Coccidae

Ala., Ga., Miss.,
southern U. S.

Nectria aglaeothele Berk. & Curt. See Sphaerostilbe
flammea Tul.

Nectria coccicola Ell. & Ev. See Podonectria coccicola
(Ell. & Ev.) Petch

NECTRIA DIPLOA Berk. & Curt. Linn. Soc. Cuba Jour. 10:
378. 1868.

Perfect stage of Microcera fujikuroi Miyabe & Sawada

Hosts: Aonidiella aurantii (Mask.)

Chrysomphalus aonidum (L.)

Chrysomphalus obscurus (Comst.)

Chrysomphalus tenebriosus (Comst.)

Ischnaspis longirostris (Sign.)

Lepidosaphes beckii (Newm.)

Selenaspidis articulatus (Morg.)?

Tex.*
Fla.
Fla.

Fla.
Tex.*

Nectria tuberculariae Petch. See Nectria vilis (Syd.)
Petch

NECTRIA VILIS (Syd.) Petch Brit. Mycol. Soc. Trans. 10:
191. 1925.

Syns.: Hypocrella vilis Syd. Ann. Mycol. 15: 215. 1917.

Nectria tuberculariae Petch Brit. Mycol. Soc.
Trans. 7: 157. 1921.

Only imperfect stage reported in North America.

Nomuraea prasina Maublanc. See Spicaria prasina (Maublanc) Saw.

Oospora destructor (Metsch.) Delacr. See Metarrhizium anisopliae
(Metsch.) Sor.

OPHIOCORDYCEPS ACICULARIS (Rav.) Petch Brit. Mycol. Soc. Trans.
18: 58-61. 1933.

Syns.: Cordyceps acicularis Rav. Linn. Soc. Jour. 1: 158. 1857.

Cordyceps carolinensis Berk. & Rav. In Rav. Fungi Carol.
exsic. No. 29. 1852.

Cordyceps ravenelii Berk. & Curt. Linn. Soc. Jour. 1:
159. 1857.

Torrubia superficialis Pk. N. Y. State Mus. Rpt. 28:
70. 1875.

OPHIOCORDYCEPS ACICULARIS - (Continued)

Hosts: Coleoptera
Elateridae
Phyllophaga fusca (Froel.)
Undetermined insects

S. C.
S. C., Canada*
Pa.,* Canada
N. C., Tenn.

OPHIOCORDYCEPS CALOCEROIDES (Berk. & Curt.) Petch Brit.

Mycol. Soc. Trans.

18: 63-64. 1933.

Syn.: Cordyceps caloceroides Berk. & Curt. Linn. Soc.
Jour. 10: 375-376. 1868.
Cordyceps wittii P. Henn. Engl. Bot. Jahrb. 23:
539. 1897.

Host: Hexapoda

Cuba

OPHIOCORDYCEPS CLAVULATA (Schw.) Petch Brit. Mycol. Soc.

Trans. 18: 53. 1933.

Syn.: Sphaeria clavulata Schw. Amer. Phil. Soc. Trans.
(n. ser.) 4: 183. 1832.

Cordyceps pistillariaeformis Berk. & Br. Ann. Nat.
Hist. (ser. 3) 13. 1861.

Cordyceps clavulata (Schw.) Ell. In Ell. & Ev. North
Amer. Pyren. 61. 1892.

Perfect stage of Hirsutella lecanicola (Jaap) Petch

Hosts: Coccidae

D. C., N. Dak.,
N. H.,* Vt., Va.,
Canada*

Lecanium sp.

Ind., Mich., N. Dak.,
N. J., N. Y., Wis.
D. C.
N. Y.

Lecanium corni Bouche

Lecanium fletcheri (Ckll.)

Lecanium nigrofasciatum Perg.

Lecanium quercifex Fitch

Vt.,* Canada

OPHIOCORDYCEPS HUMBERTI (Robin) Petch Brit. Mycol. Soc.

Trans. 19: 172. 1935.

Syn.: Cordyceps humberti Robin In Saussure Mon. Guepes
Soc. pp. CLXIV & 39.
1853-8.

Perfect state of Hirsutella saussurei (Cke.) Speare

Host: Vespidae

Ophiocordyceps macularis Mains. See Cordyceps macularis Mains.

OPHIOCORDYCEPS PELTATA (Wakef.) Petch Brit. Mycol. Soc. Trans.

16: 74. 1931.

Syn.: Cordyceps peltata Wakef. Kew Roy. Bot. Gard Bul.
Misc. Inform. 1916: 74.
1916.

Host: Cryptorhynchus sp.

OPHIOCORDYCEPS UNILATERALIS (Tul.) Petch Brit. Mycol. Soc.

Trans. 16: 74. 1931.

Syns.: Cordyceps unilateralis (Tul.) Sacc. Syll. Fung.

2: 570. 1883.

Torrubiella unilateralis Tul. Sel. Carp. Fung.

3: 18. 1865.

Host: Formicidae

Maine, Mich., Miss.,
N. C., Cuba

Ophionectria coccicola (Ell. & Ev.) Berl. & Vogl. See

Podonectria coccicola
(Ell. & Ev.) Petch

PENICILLIUM SP.

Hosts: Epilachna varivestis Muls.

Heliothis armigera (Hbn.)

Paradexodes epilachnae Ald.

Mass., Ohio
Va.
Ohio

PENICILLIUM ALBELLUM (Mass.) Petch Brit. Mycol. Soc. Trans.

16: 210. 1932.

Syn.: Cordyceps albella Mass. Ann. Bot. 9: 39. 1895.

Host: Gryllidae

Cuba

PENICILLIUM LUTEUM (series) Thom. The Penicillia, p. 479.

1930.

Host: Diatraea saccharalis (F.)

Cuba

PENICILLIUM BREVICAULE Sacc. Michelia 2: 547. 1882.

Host: Nygmia phaeorrhoea (Donov.)

PENICILLIUM CYCLOPIUM Westling Arch. f. Botanik 11: 90. 1911.

Host: Eyturus unicolor Say

Wash.*

PENICILLIUM WAKSMANI Zaleski Polon. Acad. des Sci. Math. et

Nat. Bul. (ser. B) 468.

1927.

Host: Coleoptera

D. C.*

PODONECTRIA COCCICOLA (Ell. & Ev.) Petch Brit. Mycol. Soc.

Trans. 7: 146. 1921.

Syns.: Nectria coccicola Ell. & Ev. Jour. Mycol. 2: 39.

1886.

Ophionectria coccicola (Ell. & Ev.) Berl. & Vogl.

In Sacc. Syll. Fung. Add.

218. 1886.

Scoleconectria coccicola (Ell. & Ev.) Seaver Mycologia

1: 197. 1909.

Perfect stage of Tetracrium coccicolum Hoehn.

PODONECTRIA COCCICOLA - (Continued)

Hosts: Aspidiotus perniciosus Comst.
Chionaspis citri Comst.
Coccidae

Lepidosaphes beckii (Newm.)

Lepidosaphes gloverii (Pack.)

Lepidosaphes sp.

Parlatoria pergandii Comst.

Fla.
Cuba, P. R.
Fla., * La., * Costa Rica, *
Cuba, *
Fla., * La., * Miss., *
Cuba, Dominican Republic,
P. R., *
Fla.
Cuba
Fla.

Pseudomicrocera henningsii (Koorders) Petch. See

Microcera fujikuroi
Miyabe & Sawada.

RHINOTRICHUM DEPAUPERATUM Charles Mycologia 32: 540. 1940.

Host: Paratetranychus yothersi McG.

Fla., *

RHIZOPUS NIGRICANS Ehrenb. Nova Acta Acad. Caes.

Leopaldina 10: 198. 1820.

Host: Sphingidae

Va.

SAPROLEGNIA

Species of this genus are given in lists of entomogenous fungi,
but they are not recognized in North America as truly parasitic.

SAPROLEGNIA FERAX (Gruith) Thuret Ann. Sci. Nat. (ser. 3)

14: 230. 1850.

Syn.: Saprolegnia thureti DBy. Senckenb. Naturf. Gesell.
Abhandl. 12: 102. 1881.

Hosts: Diptera
Formicidae
Sphinx sp.

SAPROLEGNIA KAUFMANNIANA Pieters Bot. Gaz. 60: 488. 1915.

Host: Diptera

SAPROLEGNIA MONOICA Pringsh. Jahrb. f. Wiss. Bot. 1: 292. 1858.

Hosts: Diptera
Muscidae

SAPROLEGNIA MONOICA Pringsh. var. VEXANS Pieters Bot. Gaz.

60: 489. 1915.

Host: Diptera

Saprolegnia thureti DBy. See S. ferax (Gruith) Thuret.

SCLERODERRIS GIGASPORE Mass. Kew Roy. Bot. Gard. Bul.,
Misc. Inform. 1910:
3. 1910.
Probably Podonectria coccicola (Ell. & Ev.) Petch Brit.
Mycol. Soc. Trans. 7:
149. 1921.

Host: Lepidosaphes beckii (Newm.) Barbados
Scoleconectria coccicola (Ell. & Ev.) Seaver. See Podonectria coccicola (Ell. & Ev.) Petch.

SCORIAS SPONGIOSA (Schw.) Fr. System. Mycol. 3: 291.
1832. D. C., Canada
Syn.: Botrytis spongiosa Schw. Naturf. Gesell. zu
Leipzig 1: 127. 1822.
Associated with Prociphilus imbricator (Fitch) and
Prociphilus tessellatus (Fitch)

SEPTOBASIDIUM

According to Couch (see "The Genus Septobasidium"), all species of Septobasidium so far discovered are found on living plants in association with scale insects. Although a true parasitization of the insects often exists, there is also an interesting symbiotic relation of the fungus and insect. The fungus is not only dependent on the insects for food but also as a means of distribution. On the other hand, the scale insects are protected by the fungus against unfavorable extremes of heat, dryness, or cold, but more especially from insect parasites. It has been shown (Couch) that the thinner the fungus roof over the scale the greater is the penetration of the ovipositor of certain wasps.

SEPTOBASIDIUM ALNI Torrend Broteria (Ber. Bot.) 11: 84. 1913;
Couch, The Genus Septobasidium,
p. 150. 1938.

Hosts:	Aspidiotus ancyclus (Putn.)	S. C.
	Aspidiotus diffinis Newst.	S. C.
	Aspidiotus forbesi Johns.	S. C.
	Aspidiotus osborni Newm. & Ckll.	S. C.
	Chrysomphalus obscurus (Comst.)	S. C.
	Coccidae	Ga., N. C., S. C.*
	Cryptophyllaspis liquidambaris Kot.	S. C.

SEPTOBASIDIUM ALNI var. SQUAMOSUM Couch Elisha Mitchell Sci.
Soc. Jour. 51: 35. 1935.

Host: Cryptophyllaspis liquidambaris Kot. S. C.

SEPTOBASIDIUM ALVEOLATUM Couch Elisha Mitchell Sci. Soc.
Jour. 44: 253. 1929; Couch,
The Genus Septobasidium,
p. 216. 1938.

Associated with Coccidae Jamaica

SEPTOBASIDIUM APICULATUM Couch Elisha Mitchell Sci. Soc. Jour.
51: 62. 1935; Couch, The
Genus Septobasidium, p. 106. Ark., Fla.
1938. N. C., * La., S. C., V.

SEPTOBASIDIUM APICULATUM - (Continued)

Hosts: *Aspidiotus ancyllus* (Putn.)
Aspidiotus diffinis Newst.
Aspidiotus forbesi Johns.
Aspidiotus juglans-regiae Comst.
Aspidiotus osborni Newst. & Ckll.
Chrysomphalus tenebricosus (Comst.)
Parlatoria proteus (Curt.)

N. C.*

SEPTOBASIDIUM ARBOREUM (Couch) Boed. & Stein. Buitenzorg
Jard. Bot. Bul. (ser. 3)
11: 163. 1931; Couch, The
Genus Septobasidium, p.
131. 1938.

Syn.: Helicobasidium arboreum Couch Elisha Mitchell Sci.
Soc. Jour. 44: 257. 1929.

Associated with Coccidae

Jamaica

SEPTOBASIDIUM AREOLATUM Couch Elisha Mitchell Sci. Soc.
Jour. 44: 248; Couch, The
Genus Septobasidium, p.
88. 1938.

Associated with Coccidae

Jamaica

SEPTOBASIDIUM ATRATUM Pat. Soc. Mycol. de France Bul. 16:
181. 1900; Couch, The
Genus Septobasidium, p.
143. 1938.

Host: *Aspidiotus* sp.

Guadeloupe

SEPTOBASIDIUM ATROPUNCTUM Couch Elisha Mitchell Sci. Soc.
Jour. 44: 251. 1929;
Couch, The Genus Septo-
basidium, p. 190. 1938.

Host: Coccidae

Jamaica

SEPTOBASIDIUM BOGORIENSE Pat. Monsunia 1: 138. 1900;
Couch, The Genus Septobasidium,
p. 213. 1938.

Host: Coccidae

Panama, St. Lucia

SEPTOBASIDIUM BURTII Lloyd Mycol. Writings 7: 1286. 1924;
Couch, The Genus Septo-
basidium, p. 168. 1938.

Ala.,* D. C.,*
Fla.,* Ga.,* Ky.,*
La.,* Miss.,* N. C.,*
S. C.,* Tex.*

(S. retiforme of American authors)

Hosts: *Aspidiotus osborni* Newm. & Ckll.
Chrysomphalus obscurus (Comst.)

SEPTOBASIDIUM BURTII Lloyd var. ACERINUM Couch The
Genus Septobasidium,
p. 171. 1938.

Host: Coccidae?

N. C.

SEPTOBASIDIUM CANESCENS Burt. Mo. Bot. Gard. Ann. 3: 342.
1916; Couch, The Genus
Septobasidium, p. 107.
1938.

Host: Mycetococcus ehrhorni (Ckll.)

Cali

SEPTOBASIDIUM CARESTIANUM Bres. Malpighia 11: 254. 1897;
Couch, The Genus
Septobasidium, p.
155. 1938.

Host: Chionaspis corni Cooley

Ontario

SEPTOBASIDIUM CASTANEUM Burt. Mo. Bot. Gard. Ann. 3:
330. 1916; Couch,
The Genus Septo-
basidium, p. 147. 1938.

Hosts: Aspidiotus forbesi Johns.
Aspidiotus herculeanus Ckll. & Hadden
Coccidae

N. C.

Fla.

Ala., Fla., Ga., La.,
Miss., N. C., * S. C.*

SEPTOBASIDIUM CIRRATUM Burt Mo. Bot. Gard. Ann. 3:
334. 1916; Couch,
The Genus Septo-
basidium, p. 256.
1938.

Host: Coccidae

Cub

SEPTOBASIDIUM COKERI Couch Elisha Mitchell Sci. Soc.
Jour. 51: 40. 1935;
Couch, The Genus Septo-
basidium, p. 138. 1938.

Hosts: Aspidiotus osborni Newm. & Ckll.
Coccidae

Fla.

Fla., N. C., * N. J.,
Tenn., * Va.

SEPTOBASIDIUM CONIDIOPHORUM Couch The Genus Septobasidium,
p. 262-3. 1938.

Hosts: Coccidae
Lepidosaphes beckii (Newm.)

S. C., * Tex., * Cub
Fla

SEPTOBASIDIUM CREMEUM Couch Elisha Mitchell Sci. Soc.
Jour. 51: 46. 1935;
Couch, The Genus Septo-
basidium, p. 227. 1938.

Hosts: Aspidiotus juglans-regiae Comst.
Coccidae
Cryptophyllaspis liquidambaris Kot.

Fla.

Fla.

Fla.

SEPTOBASIDIUM CURTISII (Berk. & Desm.) Boed. & Stein.

Buitenzorg Jard. Bot.
Bul. (ser. 3) 11: 181.
1931; Couch, The Genus
Septobasidium, p. 164.
1938.

Syn.: Glenospora curtisii Berk. & Desmaz. Roy. Hort. Soc.
Jour. 4: 243. 1849.

Widespread
N. J.
N. J.

Hosts: Aspidiotus sp.
Chionaspis sp.
Chionaspis gleditsiae Sanders
Chionaspis sylvatica Sanders
Chrysomphalus obscurus (Comst.)
Coccidae

Ala.,* Ark., Fla.,*
Ga.,* La.,* Md.,* Miss.,*
N. C.,* N. J.,* S. C., Va.,*
Guadeloupe, Guatemala

SEPTOBASIDIUM FILIFORME Couch Elisha Mitchell Sci.

Soc. Jour. 51: 49.
1935; Couch, The Genus
Septobasidium, p. 205.
1938.

Hosts: Coccidae

N. C.,* Va.

SEPTOBASIDIUM FRAGILE Couch The Genus Septobasidium, p.

196. 1938.

Associated with Coccidae

Jamaica

Septobasidium frustulosum (Berk. & Curt.) Pat. See S.
rhabarbarinum (Mont.)
Bres.

SEPTOBASIDIUM FUMIGATUM Burt. Mo. Bot. Gard. Ann. 3: 340.

1916; Couch, The Genus
Septobasidium, p. 180.
1938.

Hosts: Aspidiotus sp.
Coccidae

Fla.,* Ga., La.,
S. C.,* Miss.*

Chrysomphalus tonebricosus (Comst.)

SEPTOBASIDIUM FUSCUM Couch Elisha Mitchell Sci. Soc. Jour.

51: 15. 1935; Couch, The
Genus Septobasidium, p.
191. 1938.

Host: Aspidiotus diffinis Newst.

La., Miss.*

SPEOTBASIDIUM GRANDISPORUM Couch Elisha Mitchell Sci.
Soc. Jour. 51: 72. 1935;
Couch, The Genus Septo-
basidium, p. 79. 1938.

Host: Chrysomphalus obscurus (Const.)

S. C.*

SEPTOBASIDIUM GRISEUM Couch The Genus Septobasidium, p.
98. 1938.

Host: Coccidae

Costa Rica, Cuba,
Dominican Republic

SEPTOBASIDIUM HESLERI Couch Elisha Mitchell Sci. Soc.
Jour. 51: 54. 1935;
Couch, The Genus Septo-
basidium, p. 117. 1938.

Host: Chionaspis gleditsiae Sanders

Tenn.

SEPTOBASIDIUM JAMAICAENSE Burt Mo. Bot. Gard. Ann. 3: 333.
1916; Couch, The Genus
Septobasidium, p. 81. 1938.

Host: Coccidae

Jamaica*

SEPTOBASIDIUM LACUNOSUM Couch The Genus Septobasidium, p.
291. 1938.

Host: Coccidae

Costa Rica

SEPTOBASIDIUM LANGLOISII Pat. Soc. Mycol. de France Bul. 16:
54. 1900; Couch, The Genus
Septobasidium, p. 98. 1938.

Hosts: Aspidiotus sp.

Fla., * La.,

Miss.

Coccidae

La., * Miss., * Cuba*

Common in Gulf Coast States

SEPTOBASIDIUM LEPIDOSAPHIS Couch Elisha Mitchell Sci.
Soc. Jour. 51: 35.
1935; Couch, The Genus
Septobasidium, p. 146.
1938.

Host: Lepidosaphes beckii (Newm.)

Fla.

SEPTOBASIDIUM LEPRIEURII (Mont.) Pat. Soc. Mycol. de France
Bul. 16: 55. 1900; Couch,
The Genus Septobasidium,
p. 174. 1938.

Syn.: Corticium leprieurii Mont. Ann. Sci. Nat. (ser. 4)
1: 140. 1854.

Hosts: Aspidiotus diffinis Newst.
Aspidiotus herculeanus Ckll. & Hadden
Coccidae

Fla.

Fla., Miss., S. C.,
Guadeloupe

SEPTOBASIDIUM LEPROSUM Couch Elisha Mitchell Sci. Soc.

Jour. 51: 42. 1935;
Couch, The Genus Septo-
basidium, p. 162. 1938.

Host: Coccidae

La., N. C., S. C.,
Va.

SEPTOBASIDIUM LILACINOALBUM Couch Elisha Mitchell Sci.

Soc. Jour. 51: 56.
1935; Couch, The Genus
Septobasidium, p. 114.
1938.

Host: Chionaspis gleditsiae Sanders

N. C., S. C.

SEPTOBASIDIUM LINDERI Couch The Genus Septobasidium, p.
104. 1938.

Host: Coccidae

Mass.*

SEPTOBASIDIUM MARIANI Bres. Ann. Mycol. 1: 24. 1903;

Couch, The Genus Septo-
basidium, p. 134. 1938.

Host: On several species of Coccidae

Ark., La.,* N. C.,
N. J.,* S. C., Tenn.

SEPTOBASIDIUM MEXICANUM Sydow Ann. Mycol. 18: 154.

1920; Couch, The
Genus Septobasidium,
p. 231. 1938.

Host: Coccidae

Mexico

SEPTOBASIDIUM PANNOSUM (Fr.) Bres. Ann. Mycol. 14: 242.
1916.

Syn.: Corticium pannosum Fr. Nov. Synb. p. 114. 1851;
Couch, The Genus Septo-
basidium, p. 235. 1938.

Host: Coccidae

Mexico

SEPTOBASIDIUM PATOUILLARDII Burt Mo. Bot. Gard. Ann. 3:

332. 1916; Couch, The
Genus Septobasidium, p.
85. 1938.

Host: Chionaspis gleditsiae Sanders

Fla., La., N. C.,
S. C.

Coccidae

Ala.,* La.,* Miss.*

SEPTOBASIDIUM PECKII Couch Elisha Mitchell Sci. Soc.

Jour. 51: 75. 1935;
Couch, The Genus Septo-
basidium, p. 274. 1938.

Host: Chionaspis sp.

N. Y.

SEPTOBASIDIUM PEDICELLATUM (Berk. & Curt.) Pat. Jour. de
Bot. 6: 61, 1892; Couch,
The Genus Septobasidium,
p. 215. 1938.

Syn.: Thelephora pedicellata Berk. & Curt. Wright's
Cuban exsic. No. 798,
non Schw.

Hosts: Aspidiotus sp. Cuba
Lepidosaphes beckii (Newn.)

SEPTOBASIDIUM PILOSUM Deed. & Stein. Arch. Theecult. 4: 48.
1930; Couch, The Genus
Septobasidium, p. 261.
1938.

Hosts: Coccidae Fla., La.
Leucaspis indica Marl. Fla.

SEPTOBASIDIUM PINICOLA Snell Mycologia 14: 55-60. 1922;
Couch, The Genus Septo-
basidium, p. 178. 1938.

Host: Chermes sp. Idaho, Maine,
Mass., * N. H.,
N. C., * N. Y.,
Pa.

SEPTOBASIDIUM PSEUDOPEDICELLATUM Burt Mo. Bot. Gard. Ann.
3: 327. 1916; Couch,
The Genus Septobasidium,
p. 132. 1938.

Host: Coccidae Ala., * Fla., * Ga., *
Ky., * La., * Mich., * N. C.,
Pa., Miss., * R. I., * S. C.,
Tenn., * Va., * W. Va., * Wis.,
Mexico

SEPTOBASIDIUM PURPUREUM Couch Elisha Mitchell Sci. Soc.
Jour. 44: 255. 1929;
Couch, The Genus Septo-
basidium, p. 80. 1938.

Host: Coccidae Jamaica

SEPTOBASIDIUM RETIFORME (Berk. & Curt.) Pat. Soc. Mycol. de
France Bul. 16: 55. 1900.
Couch, The Genus Septo-
basidium, p. 90. 1938.

Syn.: Thelephora retiformis Berk. & Curt. Linn. Soc. Bot.
Jour. 10: 330. 1868.

Host: Coccidae Cuba*

Septobasidium retiforme of American authors. See S. burtii
Lloyd.

SEPTORASIDIUM RHABARBARINUM (Mont.) Bres. Ann. Mycol.
14: 240. 1916; Couch,
The Genus Septobasidium,
p. 122. 1938.

Syns.: Daedalea rhabarbarinum Mont. Ann. Sci. Nat. (ser.
2) 13: 205. 1840.
Septobasidium frustulosum (Berk. & Curt.) Pat.
Soc. Mycol. de France
Bul. 10: 79. 1894.

Hosts: Aspidiotus diffinis Newst.
Coccidae

Jamaica
Cuba, Grenada,
Guadeloupe, Guatemala,
Jamaica, Mexico, Nicaragua,
Panama

SEPTORASIDIUM RUGULOSUM Couch Elisha Mitchell Sci. Soc.
Jour. 51: 59. 1935;
Couch, The Genus Septo-
basidium, p. 129. 1938.

Host: Chionaspis gleditsiae Sanders

Fla., La., S. C.*

SEPTORASIDIUM SABALIS Couch Elisha Mitchell Sci. Soc.
Jour. 51: 69. 1935;
Couch, The Genus
Septobasidium, p. 93.
1938.

Host: Constockiella sabalis (Const.)

La.*

SEPTORASIDIUM SABAL-MINOR Couch Elisha Mitchell Sci. Soc.
Jour. 51: 19. 1935;
Couch, The Genus Septo-
basidium, p. 186. 1938.

Host: Constockiella sabalis (Const.)

Fla.*

SEPTORASIDIUM SCHWEINITZII Burt Mo. Bot. Gard. Ann. 3: 324.
1916; Couch, The Genus
Septobasidium, p. 112.
1938.

Host: Chionaspis gleditsiae Sanders

N. C.,* S. C.

SEPTORASIDIUM SEPTORASIDIODES (P. Henn.) Lloyd Mycol.
Writings 5: 722. 1917;
Couch, The Genus Septo-
basidium, p. 254. 1938.

Syn.: Hymenochaete septobasidioides P. Henn. Hedwigia
43: 172. 1904.

Host: Associated with Coccidae

Jamaica

SEPTOBASIDIUM SINUOSUM Couch Elisha Mitchell Sci. Soc.

Jour. 51: 65. 1935;
Couch, The Genus Septobasidium, p. 100. 1938.

Host: Aspidiotus osborni Newm. & Ckll.

Fla., La., Miss.,
N. C., S. C.*

SEPTOBASIDIUM SIPARIUM (Berk. & Curt.) Bres. Ann. Mycol.

18: 59. 1920; Couch,
The Genus Septobasidium, p. 179. 1938.

Syn.: Hymenochaete siparia Berk. & Curt. Linn. Soc. Bot.
Jour. 10: 334. 1868.

Host: Coccidae

Cuba

SEPTOBASIDIUM SPONGIUM (Berk. & Curt.) Pat. Soc. Mycol. de

France Bul. 16: 181.
1900; Couch, The Genus
Septobasidium, p. 187.
1938.

Syn.: Thelephora spongia Berk. & Curt. Linn. Soc. Bot.
Jour. 10: 330. 1868.

Hosts: Chionaspis citri Const.
Coccidae

P. R.
Fla.,* Cuba,* Dominican
Republic,* Mexico,* P. R.

Lepidosaphes beckii (Newm.)
Pinnaspis minor (Mask.)

SEPTOBASIDIUM STEVENSONI Couch The Genus Septobasidium, pp.
186-7. 1938.

Host: Coccidae

P. R.

SEPTOBASIDIUM SUBLILACINUM (Ell. & Ev.) Durt Mo. Bot. Gard.

Ann. 3: 331. 1916; Couch,
The Genus Septobasidium, p.
279. 1938.

Syn.: Thelephora sublilacina Ell. & Ev. Iowa Univ. Lab. Nat.
Hist. Bul. 4: 67. 1896.

Host: Associated with Aspidiotus sp.

Nicaragua

SEPTOBASIDIUM SYDOWII Couch Elisha Mitchell Sci. Soc. Jour.

51: 47. 1935; Couch,
The Genus Septobasidium,
p. 236. 1938.

Host: On Coccidae

Tex.

SEPTOBASIDIUM TAXODII Couch Elisha Mitchell Sci. Soc. Jour.

51: 48. 1935; Couch,
The Genus Septobasidium,
p. 193. 1938.

Host: Aspidiotus forbesi Johns.

La., P. R.

SEPTOBASIDIUM TENUE Couch Elisha Mitchell Sci. Soc.

Jour. 51: 58. 1935;

Couch, The Genus

Septobasidium, p.

128. 1938.

Hosts: Aspidiotus sp.

Aspidiotus juglans-regiae Comst.

S. C.*

Fla., Miss.

SEPTOBASIDIUM TROPICALE Burt Mo. Bot. Gard. Ann. 3:

326. 1916; Couch,

The Genus Septobasidium,

p. 209. 1938.

Host: On Coccidae

Mexico

SEPTOBASIDIUM VERRUCOSUM Couch The Genus Septobasidium,

p. 257-8. 1938.

Host: On Coccidae

Calif.

SEPTOBASIDIUM WESTONI Couch The genus Septobasidium, p.

120-1. 1938.

Host: Associated with Diaspis sp.

C. Z., Panama

SEPTOBASIDIUM SP., hybrid between S. castaneum and S.

patouillardii (?)

Couch, The Genus

Septobasidium, p.

284-5. 1938.

Host: Associated with Coccidae

Ala.,* La.

SIROSPHAERA CHLOROSTOMA Petch Brit. Mycol. Soc. Trans.

8: 209. 1923.

Hosts: Aegerita webberi Fawcett on Coccidae

Fla.*

Aschersonia turbinata Berk. on Coccidae

Fla.*

SOROSPORELLA UVELLA (Krass.) Gd. Bul. Sci. de la France

et Belg. (ser. 3) 2:

81-83. 1889.

Syn.: Tarichium uvella Krass. Soc. Nat. Nouv.-Russie

Mem. Odessa 2: pt.

75-112. 1886.

Sorospora agrotidis Sorok. Centbl. Bakt. u.

Infekkr. Jahrg. 2.4:

No. 21, 644. 1888.

Acremonium cleoni Wize. Bul. Internatl. Acad.

Sci. Cracovie, Cl. Sci.

Math. and Nat. No. 10.

713-727. (1904) 1905.

Hosts: Agrotis ypsilon (Rott.)

Cirphis unipuncta (Haw.)

Cleonus punctiventris Germ.

Euxoa tessellata (Harr.)

Md.*

SOROSPORELLA UVELLA (Krass.) Gd. - (Continued)

Hosts: *Feltia subgothica* (Haw.)

Graphiphora c-nigrum (L.)

Heliothis armigera (Hbn.)

Peridroma saucia (Hbn.)

Phalaenidae

Scapteriscus acleatus R. & H.

Mass.,* N. J.,* Va.*

Mass.,* N. J.,* Va.*

Eastern U. S., and Canada
Fla.*

Sphaeria clavulata Schw. See Ophiocordyceps clavulata
(Schw.) Petch.

SPHAEROSTILBE

Petch's study of Sphaerostilbe has shown that S. coccophila Tul., according to the specimens cited by the Tulasnes, consists of the perfect stage of one species, "S. aurantiicola (Berk. & Br.) Petch, and the imperfect stage (Microcera coccophila Desm.) of S. flammea." Petch further observes that to differentiate accurately between the two species, S. aurantiicola and S. flammea, it is necessary to have the perithecial stages, in addition to the imperfect stages, although this may not be strictly true of specimens collected in the tropics. See Petch, Brit. Mycol. Soc. Trans. 7: 109-129. 1921.

SPHAEROSTILBE AURANTIICOLA (Berk. & Br.) Petch Peradeniya, Ceylon,
Roy. Bot. Gard. Ann. 7: 119.
1920. See Petch, Brit. Mycol.
Trans. 7: 158. 1921.

Syns.: Sphaerostilbe coccophila Tul. Sel. Fung. Carp. 3: 105.
1865.

Nectria aurantiicola Berk. & Br. Linn. Soc. Jour. 14:
117. 1873.

Perfect stage of Microcera aurantiicola Petch

Hosts: <i>Aonidiella aurantii</i> (Mask.)	P. R.
<i>Aspidiotus</i> sp.	Fla., Ga., Dominican Republic
<i>Aspidiotus ancylus</i> (Putn.)	Fla.
<i>Aspidiotus diffinis</i> Newst.	La.*
<i>Aspidiotus forbesi</i> Johns.	Fla.
<i>Aspidiotus hederæ</i> (Vall.)	Canada, P. R.
<i>Aspidiotus lataniae</i> Sign.	Fla., P. R.
<i>Aspidiotus perniciosus</i> Comst.	Fla.,* Ga.,* P. R.
<i>Asterolecanium pustulans</i> Ckll.	P. R.
<i>Chionaspis citri</i> Comst.	Panama*
<i>Chionaspis pinifoliae heterophyllae</i> Cooley	P. R.
<i>Chrysomphalus aonidum</i> (L.)	Fla., P. R.
<i>Chrysomphalus dictyospermi</i> (Morg.)	
<i>Chrysomphalus obscurus</i> (Comst.)	Fla.,* Isle of Pines, West Indies
<i>Chrysomphalus tenebricosus</i> (Comst.)	
Coccidae	Costa Rica,* Dominican Republic
<i>Coccus mangiferae</i> (Green)	
<i>Coccus viridis</i> Green	Fla.

SPHAEROSTILBE AURANTIICOLA - (Continued).

- Hosts: Comstockiella sabalis Comst. Fla., P. R.
 Dialeurodes citri (Ashm.) Fla.
 Dialeurodes citrifolii (Morg.)
 Diaspis sp. La., Miss., P. R.
 Howardia biclavis (Comst.)
 Ischnaspis longirostris (Sign.)
 Lepidosaphes sp. Dominican Republic
 Lepidosaphes beckii (Newm.) Fla.,* Ga., P. R.
 Lepidosaphes gloveri (Pack.) Fla.
 Lepidosaphes ulmi (L.) Fla.,* Miss., Canada,*
 Parlatoria pergandii (Comst.) P. R.
 Paraltoria proteus Curt. Fla.*
 Pinnaspis minor (Mask.) P. R.
 Pseudococcus citri (Risso) P. R.
 Pseudodiaspis yuccae (Ckll.)
 Saissetia oleae (Bern.)
 Selenaspidis articulatus (Morg.) P. R.

Sphaerostilbe coccophila Tul. See S. auranticola (Berk. & Br.) Petch.

SPHAEROSTILBE FLAMMEA Tul. Sel. Fung. Carp. 1: 180. 1861.

Syn.: Nectria aglaothele Berk. & Curt. Grev. 4: 45. 1875.

See Petch, Brit. Mycol.

Soc. Trans. 7: 120. 1921.

Perfect stage of Microcera coccophila Desm.

- Hosts: Chionaspis citri Comst. Panama
 Chrysomphalus obscurus (Comst.) Fla.
 Coccidae Ga., La.,* Mass.,
 N. J.,* Pa., S. C.,
 Tex., Cuba, P. R.

SPICARIA SP.

- Hosts: Heliothis armigera (Hbn.) Conn.
 Icerya purchasi Mask. P. R.*

SPICARIA ALEYRODIS Johnston Soc. Cubana Hist. Nat. Mem.,
 "Filipe Poey" 3: 79. 1918.

Host: Trialeurodes variabilis Quaint. Cuba

SPICARIA CANADENSIS Vuill. Canadian Ent. 57: 97-99. 1925.

Host: Stilpnotia salicis (L.) Canada, Cuba

SPICARIA FARINOSA (Fr.) Vuill. Rev. Gen. de Bot. 26: 161.
 1914.

- Syns.: Ramaria farinosa Dicks. Crypt. Brit. 2: 25. 1790.
Isaria farinosa (Dicks.) Fr. System. Mycol. 3: 271.
 1832.

SPICARIA FARINOSA - (Continued)

Hosts: Carpocapsa pomonella (L.) Del.,* Wash.*
 Isia isabella (A. & S.)
 Lepidoptera
 Lygaeonematus erichsonii (Htg.) Canada
 Nephelodes emmedonia (Cram.)
 Phyllophaga sp. Ill.
 Porthetria dispar (L.) Conn.
 Pyrausta nubilalis (Hbn.) (laboratory experiments) Mass.

SPICARIA GRACILIS Petch Brit. Mycol. Soc. Trans. 16: 241-242. 1932.

Syn.: Coremium gracilis Petch Brit. Mycol. Soc. Trans. 11: 260. 1926.

Hosts: Bruchus pisorum (L.) Oreg.

SPICARIA HELIOTHIS Charles Phytopathology 28: 897. 1938.

Host: Heliothis armigera (Hbn.) Ill.,* N. J.,* Ohio, Va.

SPICARIA JAVANICA Bally Meded. Koffiebessenboek Fonds 6: 147. 1923.

Host: Icerya purchasi Mask. Fla., P. R.

SPICARIA LAXA Petch Brit. Mycol. Soc. Trans. 21: 60-61. 1937.

Host: Coleoptera Maine

SPICARIA PRASINA (Maubl.) Sawada, Descriptive Catalogue of Formosan Fungi, p. 606. 1919.

Syn.: Nomuraea prasina Maubl. Soc. Mycol. de France, Bul. 19: 295-296. 1903.

Host: Anticarsia gemmatilis (Hbn.) Fla.,* La.

SPICARIA RILEYI (Farl.) Charles Mycologia 28: 398-9. 1936.

Syn.: Botrytis rileyi Farl. U. S. Comm. Agr., Rpt. 1883, p. 121. 1884.

Hosts: Anticarsia gemmatilis (Hbn.) Fla.,* Ga.,* Ind.,

Autographa brassicae (Riley) La.,* N. Y., P. R.*

D. C., La., Ohio,*

Dominican Republic

Fla

Dominican Republic

Va.

Va.

D. C., Fla.,* La.,

Ohio, P. R

Cub

Ind.,* N. Y

Fla

Phalaenidae

Plathypena scabra (F.)

Prodenia ornithogalli Guen.

SPOROTRICHUM SP.

Hosts: Aphis sp.
Aspidiotus perniciosus Comst.
Chauliognathus pennsylvanicus Deg.
Coccidae
Dialeurodes citri (Ashm.)

Wash.*
Mexico
Wash.*
P. R.*
Fla.*

Sporotrichum araneorum (Cav.) Mass. See Acremonium tenuipes
Petch.

SPOROTRICHUM COLUMNARE Petch Brit. Mycol. Soc. Trans. 19:
186-187. 1935.

Hosts: On an undetermined fungus on cocoons of Araneida.
Cicadellidae

P. R.
Tenn.

Sporotrichum densum Lk. See Beauveria densa (Lk.) Vuill.

Sporotrichum entonophilum Pk. See Beauveria bassiana (Bals.)
Vuill.

SPOROTRICHUM FLAVISSIMUM Lk. Gesell. f. Naturf. Freunde
Sitzber. Berlin 7: 25-45.
1916.

Host: Coleoptera

Sporotrichum larvata Pk. See Beauveria bassiana (Bals.)
Vuill.

Sporotrichum larvicolum Pk. See Beauveria bassiana (Bals.)
Vuill.

SPOROTRICHUM LECANII Pk. N. Y. State Mus. Rpt. 44: 25. 1890.
Host: Lecanium sp.

SPOROTRICHUM MINIMUM Speg. Argentina Soc. Sci. Anal. 13: 24.
1882.

Hosts: Camponotus sp.
Hypera postica (Gyll.)
Polia legitima (Grote)

SPOROTRICHUM PETELOTI (Vincens) Petch Brit. Mycol. Soc. Trans.
21: 63-64. 1937.
Syn.: Beauveria peteloti Vincens Soc. Bot. de France Bul.
(ser. 4) 62: 132-144. 1915.

Host: Cordyceps dipterigena Berk. & Br. on Diptera

N. C.

STEMPHYLIUM SP.

Host: Macrosiphum pisi (Kltb.)

STEMPHYLIUM BOTRYOSUM Wallr. Fl. Crypt. Germ. 2: 300. 1833.

Host: Coccidae

Pa.

STEREOCREA AURANTIACA Petch Brit. Mycol. Soc. Trans. 23:

135. 1939.

Perfect stage of *Aschersonia aurantiaca* Petch

Host: *Paraleyrodes perseae* (Quaint.)

Fla.

Sterigmatocystis nigra v. Tiegh. See *Aspergillus niger* v. Tiegh.

SYNNEMATUM JONESII Speare Mycologia 12: 71-75. 1920.

Hosts: Unidentified host

Cicadellidae

Harpalus sp.

Hemiptera

Mezira emarginata (Say)

Mezira lobata (Say)

Philonthus sp.

D. C.

Calif

Costa Ric

L

L

Main

Tarichium uvella Krass. See *Sorosporella uvella* (Krass.) Gd.

TETRACRIUM COCCICOLUM Hoehn. Akad. der Wiss. Wien, Math.-

Nat. Kl. Sitzber. (abt.

1) 120: 407. 1911.

Syn.: *Microcera rectispora* Cke. & Mass. Grevillea 16: 4. 1888.

Imperfect stage of *Podonectria coccicola* (Ell. & Ev.) Petch.

Hosts: *Aspidiotus perniciosus* (Const.)

Chionaspis citri (Const.)

Coccidae

Fla.

Cuba, P. R.

Fla., * La., * Costa Rica,

Cuba, Dominican Republic

Fla., * La., * Miss., * Cuba

Dominican Republic, * P. R.

Lepidosaphes beckii (Newm.)

Lepidosaphes gloverii (Pack.)

Lepidosaphes ulni (L.)

Parlatoria pergandii Const.

Fla.

Miss.

Fla.

Thelephora spongia Berk. & Curt. See *Septobasidium spongium* (Berk. & Curt.) Pat.

TORRUBIELLA LECANII Johnston Soc. Cubana Hist. Nat. Mem.,

"Filipe Poey" 3: 80. 1918.

Host: *Saissetia hemisphaerica* (Targ.)

Cuba, P. R.

TORRUBIELLA GIBELLULAE Petch Ann. Mycol. 30: 391. 1932.

Syn.: *Cordyceps arachnophila* Thax. Bot. Gaz. 57: 310. 1914.

Perfect stage of *Gibellula araneorum* (Schw.) Syd.

Host: Araneida

Vt., * Va., * Cuba, P. R.

TORRUBIELLA PAXILLATA Petch Brit. Mycol. Soc. Trans. 21:
49-50. 1937.

Host: Chrysopidae

N. C., Tenn.

Torrubiella superficialis Pk. See Ophiocordyceps
acicularis (Rav.) Petch.

Torrubiella unilateralis Tul. See Ophiocordyceps unilater-
alis (Tul.) Petch.

Trichoderma konigi Ouden. See T. viride Pers.

Trichoderma lignorum (Tode) Harz. Bul. Soc. Imper. Moscou
44: 116-17. 1871. See
T. viride Pers. ex Fr.

TRICHODERMA VIRIDE Pers. ex Fr. System. Mycol. 3: 215. 1829.

For discussion of this
species complex and its
synonymy see Disby
Brit. Mycol. Soc. Trans.
23: 149-168. 1939.

Hosts: *Apis mellifera*
Culicidae

Md., Oreg.
Oreg.

TUBERCULARIA COCCICOLA Stevenson P. R. Insular Expt. Sta.
Rpt. 1916-1917: 91-92.
1917.

Syn.: Knyaria coccicola (Stevenson) Cif. Estac. Agron.
Moca Publ. (ser. Bot.)
14: 178. 1929.

Imperfect stage of Nectria vilis (Syd.) Petch.

Hosts: *Aspidiotus* sp.
Chionaspis citri Const.
Lepidosaphes beckii (Newm.)
Pinnaspis minor (Mask.)

La.,* P. R.*
P. R.
P. R.
P. R.

UREDINELLA COCCIDIOPHAGA Couch Mycologia 29: 665. 1937.

Host: *Aspidiotus* sp.

Fla., S. C.

VERMICULARIA CICADINA Ell. & Kellern. Jour. Mycol. 3: 126.
1887.

Host: *Cicada* sp.

Kans.

VERTICILLIUM CINNAMOMEUM Petch Brit. Mycol. Soc. Trans. 16:
233. 1932.

Syn.: Verticillium heterocladum Fawcett non Penz.

Hosts: *Aspidiotus destructor* Const.

Cuba

Coccus sp.

Fla.,* Cuba,* P. R.

Coccus hesperidum L.

Dialeurodes citri (Ashm.)

Ala., Fla., Miss.

Dialeurodes citrifolii (Morg.)

Fla.

Diaspis sp.

Lepidosaphes beckii (Newm.)

Fla.

Lepidosaphes gloveri (Pack.)

Parlatoria pergandii Const.

Fla.

VERTICILLIUM FULIGINOSUM Petch Brit. Mycol. Soc. Trans. 19: 186. 1935.

Host: Cicadellidae

Panama

Verticillium heterocladium of Fawcett. See Verticillium cinnamomeum Petch.

VERTICILLIUM HETEROCLADUM Penz. *Michelia* 2: 462 (1882) =
Cladobotryum heterocladium
(Penz.) Petch. Brit. Mycol. Soc. Trans. 16: 232. 1932.
According to Petch, not reported in North America.

Verticillium lecanii (Zimm.) Viegas. See Cephalosporium lecanii Zimm.

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1938. The genus Septobasidium, pp. 1-480.

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Johnston, J. R.

1915. The entomogenous fungi of Porto Rico. Porto Rico Insular Sta., Dept. Agr. and Com., Bul. 10: 1-33.

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INSECTS LISTED WITH THEIR ENTOMOGENOUS FUNGI

ACRIDIDAE

Mucor racemosus

ACRONICTA AMERICANA (HARR.)

Cordyceps elongata

Hirsutella gigantea

Isaria brachiata

ACTEBIA FENNICA (TAUSCH.)

Empusa sp.

Empusa virescens

AEOLUS DORSALIS (SAY)

Cordyceps sp.

AGRILUS BILINEATUS (WEB.)

Empusa sphaerosperma

AGRIOTES MANCUS (SAY)

Beauveria bassiana

Metarrhizium anisopliae

AGROTIS BADINODIS GROTE

Beauveria sp.

AGROTIS ORTHOGONIA MORR.

Beauveria sp.

AGROTIS SP.

Empusa grylli

Entomophthora aulicae

AGROTIS YPSILON (ROTT.)

Fusarium sp.

Sorosporella uvella

ALEUROCANTHUS WOGLUMI ASHEY

Aegerita webberi

Aschersonia aleyrodis

Aschersonia cubensis

Aschersonia goldiana

Aschersonia sp.

Aschersonia turbinata

ALEURODES SP.

Aegerita webberi

Aschersonia sp.

Aschersonia aleyrodis

Aschersonia columnifera

Aschersonia goldiana

Hypocrella phyllogena

ALEURODICUS CARDINI BACK

Aschersonia aleyrodis

ALEURODICUS MINIMUS QUAIN.

Aegerita webberi

Aschersonia aleyrodis

Aschersonia flavo-citrina

ALEURODICUS PIMENTAE LAING

Aschersonia aleyrodis

ALEUROTHRIXUS HAWARDI (QUAIN.)

Aegerita webberi

Aschersonia aleyrodis

ALEYRODIDAE

Aschersonia viridans

AMPHIPYRA PYRAMIDOIDES GUEN.

Entomophthora aulicae

ANASTREPHA LUDENS (LOEW)

Mucor racemosus

ANASTREPHA MOMBINPRAEOPTANS SEIN

Fusarium sp.

Mucor sp.

ANASTREPHA SERPENTINA (WIED.)

Aspergillus sydowi

ANISOPLIA AUSTRIACA HBST.

Metarrhizium anisopliae

ANOPHELES QUADRIMACULATUS SAY

Beauveria bassiana

ANTHONOMUS FULVIS LEC.

Beauveria globulifera

ANTICARSIA GEMMATILIS (HBN.)

Fusarium sp.

Spicaria prasina

Spicaria rileyi

AONIDIA BULLATA GREEN

Microcera sp.

AONIDIA CRENULATA GREEN

Microcera sp.

AONIDIELLA AURANTII (MASK.)

Cladosporium sp.

Microcera coccophila

Microcera fujikuroi

Nectria diploa

Sphaerostilbe aurantiicola

APHANUS UMBROSUS (DIST.)

Beauveria globulifera

APHIDIIDAE

Cladosporium sp.

Empusa aphidis

Empusa occidentalis

Empusa planchoniana

Empusa sp.

Entomophthora sp.

Fumago vagans (on honeydew)

APHIS FORDESI WEED

Empusa aphidis

APHIS GOSSYPII GLOV.

Acrostalagnus aphidum

Cladosporium aphidis

Fusarium sp.

APHIS POMI DEG.

Empusa aphidis
Empusa fresenii

APHIS SAMBUCI L.

Empusa aphidis

APHIS SP.

Acrostalagmus albus
Acrostalagmus aphidum
Cladosporium aphidis
Empusa aphidis
Empusa lageniformis
Empusa thaxteriana
Sporotrichum sp.

APHIS SPIRAECOLA PATCH

Cladosporium aphidis
Empusa fresenii
Empusa sp.

APHODIUS FIMETARIUS (L.)

Beauveria bassiana

APHODIUS SP.

Beauveria globulifera
Metarrhizium anisopliae

APHROPHORA PARALLELA (SAY)

Entomophthora aphrophorae

APION OCCIDENTALE FALL

Aspergillus flavus

APION SP.

Cordyceps sp.

APIS MELLIFERA L.

Aspergillus effusus
Aspergillus flavus
Aspergillus flavus-oryzae
Aspergillus fumigatus
Aspergillus glaucus
Aspergillus nidulans
Aspergillus ochraceus
Aspergillus oryzae
Aspergillus prasinus
Trichoderma viride

ARCTIIDAE

Empusa grylli
Isaria tenuipes

ASPIDIOTUS ANCYLUS (PUTN.)

Septobasidium alni
Septobasidium apiculatum
Sphaerostilbe aurantiicola

ASPIDIOTUS CAMELLIAE SIGN.

Microcera sp.

ASPIDIOTUS DESTRUCTOR SIGN.

Cephalosporium lecanii
Verticillium cinnamomeum

ASPIDIOTUS DIFFINIS NEWST.

Septobasidium alni
Septobasidium apiculatum
Septobasidium fuscum
Septobasidium lepricourii
Septobasidium rhabarbarinum
Sphaerostilbe aurantiicola

ASPIDIOTUS FORBESI JOHNS.

Septobasidium alni
Septobasidium apiculatum
Septobasidium castaneum
Septobasidium taxodii
Sphaerostilbe aurantiicola

ASPIDIOTUS HEDERAE (VALL.)

Sphaerostilbe aurantiicola

ASPIDIOTUS HERCULEANUS CKLL. & HADDEN

Septobasidium castaneum
Septobasidium lepricourii

ASPIDIOTUS JUGLANS-REGIAE COMST.

Septobasidium apiculatum
Septobasidium cremeum
Septobasidium tenue

ASPIDIOTUS LATANIAE SIGN.

Sphaerostilbe aurantiicola

ASPIDIOTUS OSBORNI NEWM. & CKLL.

Septobasidium alni
Septobasidium apiculatum
Septobasidium burtii
Septobasidium cokeri
Septobasidium sinuosum

ASPIDIOTUS PERNICIOSUS COMST.

Fusarium sp.
Microcera coccophila
Myriangium duriaei
Podonectria coccicola
Sphaerostilbe aurantiicola
Sporotrichum sp.
Tetracrium coccicolum

ASPIDIOTUS SP.

Fusarium epicoccum
Microcera aurantiicola
Microcera fujikuroi
Septobasidium atratum
Septobasidium curtisii
Septobasidium fumigatum
Septobasidium langloisii
Septobasidium pedicellatum
Septobasidium sublilacimum
Septobasidium tenue
Sphaerostilbe aurantiicola
Tubercularia coccicola
Uredinella coccidiophaga

ASTEROLECANIUM BAMBUSAE BOISD.

Cladosporium sp.

ASTEROLECANIUM PUSTULANS CKLL.

Sphaerostilbe aurantiicola

ATTA SINGULARIS (GUER.)

Aspergillus tamarii

AULACASPIS PENTAGONA (TARG.)

Myriangium duriaei

AUTOGRAPHA BRASSICAE (RILEY)

Beauveria densa

Beauveria globulifera

Empusa sp.

Spicaria rileyi

AUTOMERIS SP.

Beauveria bassiana

BEMBECIA MARGINATA (HARR.)

Metarrhizium anisopliae

BEMISIA INCONSPICUA (QUAINT.)

Aschersonia aleyrodis

BLATTIDAE

Cordyceps amazonica

Metarrhizium anisopliae

BLISSUS HIPTUS MONTD.

Beauveria globulifera

BLISSUS LEUCOPTERUS (SAY)

Beauveria globulifera

Beauveria vexans

Cladosporium aphidis

Empusa aphidis

Empusa sp.

BLISSUS SP.

Empusa aphidis

BOMBYX MORI L.

Beauveria bassiana

Metarrhizium anisopliae

BOTHRIOCERA SP.

Hirsutella saussurei

BRACHYRHINUS SULCATUS (F.)

Fusarium sp.

BREVICORYNE BRASSICAE (L.)

Cladosporium aphidis

Empusa aphidis

BRUCHUS PISORUM (L.)

Beauveria bassiana

Spicaria gracilis

BYTURUS UNICOLOR SAY

Cephalosporium sp.

Metarrhizium anisopliae

Penicillium cyclopium

CALENDRA MAIDIS (CHITTI.)

Beauveria densa

CALLIPHORA SP.

Empusa americana

Entomophthora bullata

CALLIPHORA VOMITORIA (L.)

Empusa americana

Empusa muscae

CALLIPTERUS TRIFOLII MONELL

Empusa aphidis

CAMPULA PELLUCIDA (SCUDD.)

Empusa grylli

Empusa sp.

CAMPONOTUS ABDOMINALIS ROGER

Cordyceps sp.

CAMPONOTUS HERCULEANUS L.

Desnidiospora myrmecophila

CAMPONOTUS HERCULEANUS PENNSYLVANICUS (D)

Beauveria globulifera

CAMPONOTUS SP.

Cordyceps lloydii

Sporotrichum minimum

CANTHON SP.

Metarrhizium anisopliae

CARABIDAE

Cordyceps stylophora

CARDIOPHORUS SP.

Metarrhizium anisopliae

CAROLINAIA CYPERI AINSLIE

Acrostalagmus aphidum

CARPOCAPSA POMONELLA (L.)

Beauveria bassiana

Beauveria globulifera

Beauveria sp.

Fusarium sp.

Hirsutella subulata

Isaria sp.

Spicaria farinosa

CATOCALA SP.

Entomophthora aulicae

CERATOMEGILLA FUSCILABRIS (MULS.)

Beauveria globulifera

CEROPLASTES FLORIDENSIS COMST.

Aschersonia turbinata

Cephalosporium lecanii

Hypocrella epiphylla

Hypocrella turbinata

CEROPLASTES SP.

Aschersonia turbinata

Hypocrella turbinata

CEUTHOPHILUS SP.

Empusa grylli

CHAETOCNEMA PULICARIA MELSH.

Beauveria globulifera

CHALCIDIDAE

Eurotium sp.

CHALCODERMUS AENEUS BOH.

Metarrhizium anisopliae

CHALEPUS DORSALUS THUNB.

Beauveria sp.

CHAULIOGNATHUS PENNSYLVANICUS DEG.

Cladosporium sp.

Empusa lampyridarum

Fusarium sp.

Macrosporium sp.

Sporotrichum sp.

CHERMES SP.

Septobasidium pinicola

CHIONASPIS CITRI COMST.

Myriangium duriae

Myriangium floridanum

Podonectria coccicola

Septobasidium spongium

Sphaerostilbe aurantiicola

Sphaerostilbe flammea

Tetracium coccicolum

Tubercularia coccicola

CHIONASPIS CORNI COOLEY

Septobasidium carestianum

CHIONASPIS GLEDITSIAE SANDERS

Septobasidium curtisii

Septobasidium hesleri

Septobasidium lilacinoalbum

Septobasidium patouillardii

Septobasidium rugulosum

Septobasidium schweinitzii

CHIONASPIS PINIFOLIAE HETEROPHYLLAE COOLEY Beauveria bassiana

Sphaerostilbe aurantiicola

CHIONASPIS SP.

Myriangium duriae

Septobasidium curtisii

Septobasidium peckii

CHIONASPIS SYLVATICA SANDERS

Myriangium duriae

Septobasidium curtisii

CHIRONOMIDAE

Empusa conica

CHIRONOMUS SP.

Empusa conica

Empusa culicis

Empusa montana

Metarrhizium anisopliae

CHORIZAGROTIS AUXILIARIS (GROTE)

Empusa sp.

CHLOROPS ASSIMILIS MACQ.

Empusa muscae

CHROMAPHIS JUGLANDICOLA (KLTB.)

Entomophthora chromaphidis

CHRYSOMPHALUS AONIDUM (L.)

Microcera aurantiicola

Microcera coccophila

Microcera fujikuroi

Nectria diploa

Sphaerostilbe aurantiicola

CHRYSOMPHALUS DICTYOSPERMI (MORG.)

Microcera coccophila

Microcera sp.

Sphaerostilbe aurantiicola

CHRYSOMPHALUS OESCURUS (COMST.)

Microcera fujikuroi

Myriangium duriae

Nectria diploa

Septobasidium alni

Septobasidium burtii

Septobasidium curtisii

Septobasidium grandisporum

Sphaerostilbe aurantiicola

Sphaerostilbe flammea

CHRYSOMPHALUS TENEBRICOSUS (COMST.)

Microcera coccophila

Microcera fujikuroi

Nectria diploa

Septobasidium apiculatum

Septobasidium fumigatum

Sphaerostilbe aurantiicola

CHRYSOPIDAE

Torrubiella paxillata

CICADA SP.

Beauveria bassiana

Cordyceps hesleri

Cordyceps sobolifera

Isaria cicada

Vermicularia cicadina

CICADELLIDAE

Beauveria globulifera

Calonectria hirsutellae

Cladosporium aphidis

Isaria brachiata

Metarrhizium anisopliae

Sporotrichum columnare

Synnematum jonesii

Verticillium fuliginosum

CICADIDAE

Cordyceps sp.

CIRPHIS UNIPUNCTA (HAW.)

Empusa virescens
Sorosporella uvella
Spicaria rileyi

CLEONUS PUNCTIVENTRIS GERM.

Sorosporella uvella

COCCIDAE

Aschersonia aleyrodidis
Aschersonia cubensis
Aschersonia turbinata
Cephalosporium sp.
Hirsutella lecaniicola
Hormodendron sp.
Hypocrella caulium
Hypocrella libera
Hypocrella tamoneae
Hypocrella turbinata
Microcera fujikuroi
Myriangium asterinosporum
Myriangium duriaei
Myriangium floridanum
Myriangium tuberculans
Ophiocordyceps clavulata
Podonectria coccicola
Septobasidium alni
Septobasidium alveolatum
Septobasidium arboreum
Septobasidium areolatum
Septobasidium atropunctum
Septobasidium bogoriense
Septobasidium burtii acerinum
Septobasidium castaneum
Septobasidium cirratum
Septobasidium cokeri
Septobasidium conidiophorum
Septobasidium creneum
Septobasidium curtisii
Septobasidium filliforme
Septobasidium fragile
Septobasidium funigatum
Septobasidium griseum
Septobasidium jamaicaense
Septobasidium lacunosum
Septobasidium langloisii
Septobasidium leprieurii
Septobasidium leprosum
Septobasidium linderi
Septobasidium mariani
Septobasidium mexicanum
Septobasidium pannosum
Septobasidium patouillardii

Septobasidium pilosum
Septobasidium pseudopedicellatum
Septobasidium purpureum
Septobasidium retiforme
Septobasidium rhabarbarinum
Septobasidium septobasidioides
Septobasidium siparium
Septobasidium spongium
Septobasidium stevensoni
Septobasidium sydowii
Septobasidium tropicale
Septobasidium verrucosum
Septobasidium sp. hybrid between S.
castaneum and S. patouillardii
Sirospheera chlorostoma
Sphaerostilbe aurantiicola
Sphaerostilbe flammaea
Sporotrichum sp.
Stemphylium botryosum
Tetracrium coccicolum

COCCINELLIDAE

Beauveria globulifera
Fusarium sp.
Isaria brachiata

COCCUS ACUMINATUS (SIGN.)

Aschersonia cubensis
Hypocrella sp.

COCCUS HESPERIDUM L.

Aschersonia turbinata
Beauveria globulifera
Cephalosporium lecanii
Hypocrella epiphylla
Verticillium cinnamomeum

COCCUS MANGIFERAE (GREEN)

Cephalosporium lecanii
Hypocrella epiphylla
Hypocrella turbinata
Sphaerostilbe aurantiicola

COCCUS SP.

Cephalosporium lecanii
Verticillium cinnamomeum

COCCUS VIRIDIS GREEN

Aschersonia sp.
Cephalosporium lecanii
Sphaerostilbe aurantiicola

COCHLIOMYIA MACELLARIA (F.)

Cordyceps dipterigena
Entomophthora bullata

COCYTIUS ANTAEUS DRURY

Cordyceps sphingum

COLEOPTERA

Cordyceps insignis
Cordyceps melolonthae
Cordyceps palustris
Cordyceps pittieri
Cordyceps sobolifera
Cordyceps stylophora
Cordyceps submilitaris
Cordyceps subsessilis
Cordyceps superficialis
Cordyceps variabilis
Cordyceps viperina
Empusa apiculata major
Isaria brachiata
Metarrhizium anisopliae
Ophiocordyceps acicularis
Penicillium waksnani
Spicaria laxa
Sporotrichum flavissimum
COLIAS EURYTHEME BDV.
Fusarium sp.
COLIAS PHILODICE GODART
Empusa sphaerosperma
COMSTOCKIELLA SABALIS (COMST.)
Septobasidium sabalis
Septobasidium sabal-minor
Sphaerostilbe aurantiicola
CONOPIA EXITIOSA (SAY)
Fusarium sp.
CONOPIA PYRI HARR.
Hirsutella subulata
CONOTRACHELUS ERINACEUS LEC.
Beauveria globulifera
CONOTRACHELUS NEUTUPHAR (HBST.)
Beauveria globulifera
CORCORIS BATATAS (F.)
Beauveria globulifera
CORYTHAICA MONACHA STAL
Acrostalagmus albus
Acrostalagmus aphidum
CORYTHUCHA GOSSYPII (F.)
Beauveria globulifera
COTINUS NITIDA (L.)
Metarrhizium anisopliae
CRAMBUS SP.
Beauveria bassiana
Empusa sp.
CRIOTERIS ASPARAGI (L.)
Acremoniaella sp.
CRYMODES DEVASTATOR (BRACE)
Fusarium sp.

CRYPTOCERCUS PUNCTULATUS SCUDD.

Metarrhizium anisopliae

CRYPTOCERCUS SP.

Metarrhizium anisopliae

CRYPTOPHYLLASPIS LIQUIDAMBARIS KOT.

Septobasidium alni

Septobasidium alni squamosum

Septobasidium cremeum

CRYPTORHYNCHUS SP.

Ophiocordyceps peltata

CUCUJIDAE

Beauveria globulifera

CULEX SP.

Empusa culicis

CULICIDAE

Empusa culicis

Empusa sphaerosperma

Trichoderma viride

CURCULIO CARYAE (HORN)

Beauveria bassiana

Metarrhizium anisopliae

CURCULIONIDAE

Beauveria globulifera

Cordyceps curculionum

Empusa sphaerosperma

CYLAS FORMICARIUS (F.)

Beauveria globulifera

Fusarium solani

Fusarium sp.

DASYCHIRA GROENLANDICA HOMEYER

Beauveria densa

DATANA SP.

Beauveria globulifera

DELTOIDINAE

Empusa apiculata

Empusa apiculata major

DENDROCTONUS FRONTALIS ZIMM.

Cylindrocolla dendroctoni

DENDROIDES BICOLOR NEWM.

Cordyceps stylophora

DESMORIS FULVUS (LEC.)

Cordyceps sp.

Metarrhizium anisopliae

DIABROTICA LONGICORNIS (SAY)

Beauveria globulifera

Metarrhizium anisopliae

DIABROTICA SOROR LEC.

Beauveria globulifera

Empusa sp.

DIABROTICA VITTATA (F.)

Beauveria globulifera

DIACRISIA VIRGINICA (F.)

Beauveria bassiana
Cladosporium sp.
Empusa grylli
Entomophthora aulicae
Macrosporium sp.
Metarrhizium anisopliae

DIALEURODES CITRI (ASHM.)

Aegerita webberi
Aschersonia flavo-citrina
Aschersonia goldiana
Aschersonia sp.
Cladosporium sp.
Fusarium aleyrodis
Hypocrella disjuncta
Hypocrella phyllogena
Hypocrella sp.
Microcera sp.
Sphaerostilbe aurantiicola
Sporotrichum sp.
Verticillium cinnamomeum

DIALEURODES CITRIFOLII (MORG.)

Aegerita webberi
Aschersonia aleyrodis
Aschersonia goldiana
Microcera sp.
Sphaerostilbe aurantiicola
Verticillium cinnamomeum

DIAPREPES ABBREVIATUS L.

Metarrhizium anisopliae

DIASPIS SP.

Septobasidium westoni
Sphaerostilbe aurantiicola
Verticillium cinnamomeum

DIASPIS ZAMIAE MORG.

Aschersonia zania
Beauveria globulifera

DIATRAEA CRAMBIDOIDES (GROTE)

Beauveria bassiana

DIATRAEA LINEOLATA WALK.

Hirsutella barberi

DIATRAEA SACCHARALIS (F.)

Aspergillus parasiticus
Beauveria bassiana
Beauveria globulifera
Cordyceps sp.
Fusarium sp.
Hirsutella barberi
Hirsutella sp.
Penicillium luteum

DIATRAEA SP.

Fusarium larvarum
Fusarium sp.

DICRANOMYIA PUBIPENNIS O. S.

Hymenostilbe ampullifera

DIPTERA

Cordyceps dipterigena
Cordyceps sp.

Empusa americana
Empusa apiculata
Empusa caroliniana
Empusa conglomerata
Empusa conica
Empusa dipterigena
Empusa echinospora
Empusa gracilis
Empusa grylli
Empusa montana
Empusa muscae
Empusa papillata
Empusa sepulchralis
Empusa sp.

Empusa variabilis

Fusarium sp.

Hymenostilbe dipterigena

Saprolegnia ferax

Saprolegnia kaufmanniana

Saprolegnia monoica

Saprolegnia monoica vexans

DISONYCHA PENNSYLVANICA (ILL.)

Beauveria globulifera

DISONYCHA TRIANGULARIS (SAY)

Beauveria globulifera

DISONYCHA XANTHOMELAENA (DALM.)

Beauveria globulifera

DISSOSTEIRA CAROLINA (L.)

Empusa grylli

Empusa sphaerosperma

DORYTOMUS SP.

Beauveria globulifera

DRAECULACEPHALA MOLLIPES (SAY)

Empusa grylli

DROSOPHILA MELANOGASTER MEIG.

Empusa muscae

DROSOPHILA REPLETA WOLLASTON

Empusa muscae

DROSOPHILA SP.

Beauveria globulifera

Cordyceps dipterigena

DYNASTINAE

Metarrhizium anisopliae

DYSDERCUS SP.

Isaria pattersoniae
DYSLOBUS DECORATUS (LEC.)

Beauveria bassiana
ELATERIDAE

Cordyceps gracilis
Cordyceps stylophora
Cordyceps variabilis
Metarrhizium anisopliae
Ophiocordyceps acicularis
Spicaria rileyi
ELEODES SP.

Metarrhizium anisopliae
EMPOASCA FABAE (HARR.)

Beauveria globulifera
Empusa sphaerosperma
EMPOASCA PAPAYAE OLAN
Empusa apiculata major
EMPOASCA SP.

Empusa sphaerosperma
EPICAUTA LEMNISCATA F.
Beauveria globulifera
EPILACHNA BOREALIS (F.)
Cordyceps sp.
EPILACHNA SP.

Metarrhizium anisopliae
EPILACHNA VARIVESTIS Muls.

Beauveria globulifera
Isaria sp.
Penicillium sp.
EPITHECIA SP.

Empusa geometralis
ERINNYIS ALOPE (DRURY)
Hymenostilbe sphingum
ERIOCOCCINAE

Hypocrella epiphylla
ESTIGMENE ACRAEA (DRURY)

Beauveria globulifera
Empusa sp.
Empusa grylli

Entomophthora aulicae
EUCALYMNATUS TESSELLATUS (SIGN.)

Aschersonia cubensis
Aschersonia sp.

Hypocrella epiphylla
EUCHAETIAS EGLE DRURY

Entomophthora aulicae
EUCOSMA GLOMERANA (WLSM.)

Hirsutella sp.
EUTHEOLA RUGICEPS (LEC.)

Beauveria bassiana

FUMENES SP.

Cordyceps ditmari
EUPHODES VOLUCRIS O. S.

Empusa muscae
EUPHYDRYAS PHAETON DRURY

Beauveria vexans
EUXOA TESSELLATA (HARR.)

Sorosporella uvella
FELTIA ANNEXA (TREBIT.)

Beauveria sp.
FELTIA DUCENS WALK.

Beauveria sp.
FELTIA GLADIARIA (MORR.)

Beauveria sp.
FELTIA SUBGOTHICA (HAW.)

Fusarium sp.
Sorosporella uvella
FIORINIA FIORINIAE (TARG.)

Microcera coccophila
FORFICULA AURICULARIA L.
Entomophthora forficulae

Metarrhizium anisopliae
FORFICULA SP.

Entomophthora sp.
FORFICULIDAE

Metarrhizium anisopliae
FORMICA SP.

Desmidiospora myrmecophila
FORMICIDAE

Beauveria globulifera
Beauveria vexans
Cordyceps myrmecophila
Desmidiospora myrmecophila
Hymenostilbe formicarum
Ophiocordyceps unilateralis
Saprolegnia ferax

FULGORIDAE

Hirsutella citriformis
GALERUCILLA XANTHOMELAEANA (SCHR.)

Beauveria globulifera
GILPINIA POLYOMA (HTG.)

Aspergillus flavus
GRAPHIPHORA C-NIGRUM (L.)

Sorosporella uvella
GRAPHOLITHA MOLESTA (BUSCK)

Isaria sp.
GRYLLIDAE

Penicillium albellum
GRYLLOTALPA HEXADACTYLA PERTY

Cordyceps monticola
GRYLLUS SP.

Beauveria globulifera

HADENOECUS SUBTERRANEUS SCUDD.

Beauveria densa

HALICTUS ILLINOISENSIS ROBTS.

Beauveria globulifera

HALICTUS SP.

Empusa sphaerosperma

HARMOLITA SP.

Aspergillus sp.

Fusarium sp.

HARMOLITA TRITICI (FITCH)

Entomophthora sp.

HARPALUS SP.

Synnematum jonesii

HELIOPHILA SP.

Beauveria sp.

Beauveria bassiana

HELIOTHIS ARMIGERA (HBN.)

Beauveria bassiana

Beauveria globulifera

Cordyceps sp.

Fusarium sp.

Isaria sp.

Metarrhizium anisopliae

Penicillium sp.

Sorosporaella uvella

Spicaria heliothis

Spicaria rileyi

Spicaria sp.

HELIOTHIS SP.

Fusarium merismoides

HEMARIS SP.

Beauveria globulifera

HEMiptera

Empusa apiculata

Empusa fresenii

Empusa lageniformis

Empusa occidentalis

Empusa thaxteriana

Synnematum jonesii

HEXAPODA

Cordyceps ophioglossoides

Cordyceps puiggarii

Cordyceps superficialis

Empusa fresenii

Isaria crassa

Isaria dussii

Isaria furcata

Isaria tenuipes

Ophiocordyceps caloceroides

HIPPODAMIA CONVERGENS GUER.

Beauveria globulifera

HORMAPHIS HAMAMELIDIS FITCH

Cladosporium sp.

Empusa aphidis

HOWARDIA BICLAVIS (COMST.)

Myriangium durinaei

Sphaerostilbe aurantiicola

HYLASTINUS OBSCURUS (MARSHAM)

Beauveria bassiana

HYLOTOMA BERBERIDIS (SCHR.)

Entomophthora sp.

HYMENOPTERA

Beauveria densa

Empusa tenthredinis

Hirsutella citriformis

HYPERA NIGRIROSTRIS (F.)

Empusa sphaerosperma

Metarrhizium anisopliae

HYPERA POSTICA (GYLL.)

Empusa sphaerosperma

Metarrhizium anisopliae

Sporotrichum minimum

HYPERA PUNCTATA (F.)

Acremoniella verrucosa

Beauveria bassiana

Beauveria globulifera

Empusa sphaerosperma

Metarrhizium anisopliae

Spicaria rileyi

HYPHANTRIA CUNEA (DRURY)

Empusa apiculata

Empusa grylli

HYPHANTRIA SP.

Beauveria globulifera

HYPHANTRIA TEXTOR HARR.

Empusa apiculata

Empusa apiculata major

Empusa grylli

Entomophthora aulicae

HYPODERMA BOVIS (DEG.)

Fusarium sp.

HYPODERMA LINEATUM (DEVILL.)

Fusarium sp.

HYSTERONEURA SETARIAE (THOS.)

Acrostalagnus aphidum

ICERYA PURCHASI MASK.

Cephalosporium lecanii

Cladosporium aphidis

Cladosporium herbarum

Cladosporium sp.

Spicaria javanica

Spicaria sp.

ICHNEUMONIDAE

Empusa sphaerosperma

ISCHNIASPIS LONGIROSTRIS (SIGN.)

Microcera coccophila

Microcera fujikuroi

Nectria diploa

Sphaerostilbe aurantiicola

ISIA ISABELLA (A. & S.)

Cordyceps militaris

Empusa grylli

Entomophthora aulicae

Spicaria farinosa

KOLLA SIMILIS (WALK.)

Empusa muscae

LAMPYRIDAE

Empusa sphaerosperma

LAPHYGMA FRUGIPERDA (A. & S.)

Beauveria globulifera

Empusa sphaerosperma

Spicaria rileyi

LEBIA BIVITTATA F.

Beauveria globulifera

LECANIUM CORNI BOUCHE

Hirsutella lecaniicola

Ophiocordyceps clavulata

LECANIUM FLETCHERI (CKLL.)

Ophiocordyceps clavulata

LECANIUM NIGROFASCIATUM PERG.

Aschersonia sp.

Cephalosporium lecanii

Ophiocordyceps clavulata

LECANIUM QUERCIFEX FITCH

Ophiocordyceps clavulata

LECANIUM SP.

Aschersonia aleyrodis

Aschersonia aristata

Aschersonia basicystis

Aschersonia cubensis

Cephalosporium lecanii

Hypocrella disjuncta

Hypocrella epiphylla

Ophiocordyceps clavulata

Sporotrichum lecanii

LEPIDOPTERA

Beauveria bassiana

Cordyceps belizensis

Cordyceps elongata

Cordyceps gracilis

Cordyceps isarioides

Cordyceps militaris

Cordyceps paludosa

Empusa geometralis

Empusa sphaerosperma

Empusa virescens

Entomophthora aulicae

Fusarium sp.

Isaria dussii

Isaria furcata

Isaria nigripes

Metarrhizium anisopliae

Spicaria farinosa

LEPIDOSAPHES BECKII (NEWM.)

Aschersonia cubensis

Aschersonia turbinata

Atichia dominicana

Fusarium aleyrodis

Hypocrella epiphylla

Hypocrella turinata

Microcera sp.

Microcera aurantiicola

Microcera coccophila

Microcera fujikuroi

Myriangium duriae

Myriangium floridanum

Nectria diploa

Podonectria coccicola

Scleroderma gigaspora

Septobasidium conidiophorum

Septobasidium lepidosaphis

Septobasidium pedicellatum

Septobasidium spongium

Sphaerostilbe aurantiicola

Tetracrium coccicolum

Tubercularia coccicola

Verticillium cinnamomeum

LEPIDOSAPHES GLOVERII (PACK.)

Microcera coccophila

Myriangium duriae

Podonectria coccicola

Sphaerostilbe aurantiicola

Tetracrium coccicolum

Verticillium cinnamomeum

LEPIDOSAPHES LASIANTHIS (GREEN)

Microcera coccophila

LEPIDOSAPHES PALLIDA (GREEN)

Microcera coccophila

LEPIDOSAPHES SP.

Podonectria coccicola

Sphaerostilbe aurantiicola

LEPIDOSAPHES ULMI (L.)

Myriangium duriae

Sphaerostilbe aurantiicola

Tetracrium coccicolum

- LEPTINOTARSA DECEMLINEATA (SAY)
Beauveria bassiana
Beauveria doryphorae
LEUCASPIS INDICA MARL.
Septobasidium pilosum
LIGYRUS GIBBOSUS (DEG.)
Beauveria bassiana
LIGYRUS TUMULOSUS BURM.
Metarrhizium anisopliae
LIMONIUS CALIFORNICUS (MANN.)
Metarrhizium anisopliae
LIMONIUS INFUSCATUS MOTS.
Metarrhizium brunneum
LOXOSTEGE STICTICALIS (L.)
Empusa Sphaerosperma
LUCILIA CAESAR (L.)
Empusa americana
Empusa muscae
LUDIUS CYLINDRIFORMIS (HEST.)
Metarrhizium anisopliae
LYGAEONEMATUS ERICHSONII (HTG.)
Spicaria farinosa
LYGUS COMPTONIS NOVASCOTIENSIS KNIGHT
Empusa erupta
Empusa sp.
MACRONOCTUA ONUSTA GROTE
Beauveria globulifera
MACROSIPHONIELLA SANBORNII (GILL.)
Acrostalagus aphidum
MACROSIPHUM ALLII JACKSON
Empusa aphidis
MACROSIPHUM LACTUCAE (L.)
Empusa aphidis
MACROSIPHUM PISI (KLTB.)
Empusa aphidis
Empusa thaxteriana
Stemphylium sp.
MACROSIPHUM SOLANIFOLII (ASHM.)
Empusa sphaerosperma
MAGICICADA SEPTEDECIM (L.)
Beauveria bassiana
Beauveria globulifera
Fusarium sp.
Massospora cicadina
Metarrhizium anisopliae major
Mucor sp.
MALACOSOMA AMERICANA (F.)
Aspergillus flavescens
Empusa grylli
Entomophthora sulcae
MALACOSOMA SP.
Empusa grylli
- MELANOCALLIS CARYAEFOLIAE (DAVIS)
Cladosporium herbarum
MELANOPLUS DIVITTATUS (SAY)
Empusa grylli
MELANOPLUS DIFFERENTIALIS (THOS.)
Beauveria globulifera
Empusa grylli
MELANOPLUS FEMUR-RUBRUM (DEG.)
Beauveria globulifera
Empusa grylli
MELANOPLUS MEXICANUS SAUSS.
Beauveria globulifera
Empusa grylli
MELANOPLUS MEXICANUS SPRETUS (WALSH)
Beauveria globulifera
Empusa grylli
MELANOPLUS SP.
Beauveria globulifera
Empusa grylli
MELOLONTA SP.
Isaria ritchiei
MELOLONTA VULGARIS F.
Beauveria densa
METAMASIUM HEMIPTERUS (L.)
Metarrhizium anisopliae
MEZIRA EMARGINATA (SAY)
Synnenetium jonesii
MEZIRA LODATA (SAY)
Synnenetium jonesii
MICROBRACON HEDETOR (SAY)
Aspergillus parasiticus
MICROPEZIDAE
Cordyceps sp.
MICROPLECTRON FUSCIPENNIS ZETT.
Aspergillus flavus
MONOCREPIDIUS SP.
Beauveria globulifera
MONOCREPIDIUS LIVIDUS (DEG.)
Metarrhizium anisopliae
MORDELLISTENA SP.
Aspergillus flavus
MORELLIA SCAPULATA (BIGOT)
Entomophthora sp.
MURGANTIA HISTRIONICA (HAHN)
Beauveria globulifera
MUSCA DOMESTICA L.
Aspergillus sp.
Beauveria globulifera
Empusa americana
Empusa grylli
Empusa muscae
Empusa sphaerosperma
Fusarium poae

MUSCA SP.

Empusa sphaerosperma

MUSCIDAE

Beauveria densa

Cordyceps dipterigena

Empusa grylli

Empusa sphaerosperma

Hymenostilbe dipterigena

Saprolegnia monoica

MUSCINA STABULANS (FALL.)

Empusa americana

MYCETOCOCCUS EHRHORNI (CKLL.)

Septobasidium canescens

MYCETOPHILIDAE

Empusa dipterigena

Empusa sphaerosperma

MYOCHROUS DENTICOLLIS (SAY)

Empusa echinospora

MYZUS PERSICAE (SULZ.)

Acrostalagus aphidum

Cladosporium aphidis

Empusa aphidis

Empusa fresenii

Macrosporium sp.

NABIS ROSEIPENNIS REUT.

Beauveria globulifera

NASUTITERMES SP.

Entomophthora coronata

NEPHELODES EMMEDONIA (GRAM.)

Fusarium sp.

Spicaria farinosa

NEUROPTERA

Empusa rhizospora

NEZARA VIRIDULA (L.)

Isaria pattersoniae

NOTOLOPHUS ANTIGUA L.

Empusa grylli

Entomophthora aulicae

NYGMIA PHAEORRHOEA (DONOV.)

Penicillium brevicaulis

NYSIUS ERICAE (SCHILL.)

Beauveria bassiana

Beauveria globulifera

ODONASPIS PIMENTAE NEWST.

Myriangium duriaei

OLIBRUS SP.

Beauveria globulifera

ORCHESTES RUFIPES LEC.

Cladosporium aphidis

ORMENIS MARGINATA BRUNNICH

Isaria sp.

ORMENIS PYGMAEA F.

Metarrhizium anisopliae

OSCINELLA FRIT (L.)

Fusarium sp.

OSCINIS SP.

Empusa muscae

PACHYSPHINX MODESTA HARR.

Entomophthora aulicae

PAGASA FUSCA (STEIN)

Beauveria globulifera

PALAEOCOCCUS ROSAE (R. & H.)

Aspergillus flavus

PANTOMORUS LEUCOLOMA (BOH.)

Metarrhizium anisopliae

PARADEXODES EPILACHNAE ALD.

Penicillium sp.

PARALEYRODES PERSEAE (QUAINT.)

Aschersonia aurantiaca

Stereocrea aurantiaca

PARANDRA BRUNNEA (F.)

Beauveria globulifera

PARATETRANYCHUS YOTHERSI MCG.

Rhinotrichum depauperatum

PARLATORIA PERGANDII COMST.

Myriangium duriaei

Podonectria coccicola

Tetracrium coccicolum

Sphaerostilbe aurantiicola

Verticillium cinnamomeum

PARLATORIA PROTEUS (CURT.)

Septobasidium apiculatum

Sphaerostilbe aurantiicola

PEMPHIGUS BETAE DOANE

Empusa aphidis

PENTATOMIDAE

Beauveria globulifera

PEREGRINIS MAIDIS (ASHM.)

Empusa fresenii

Empusa sp.

Hirsutella floccosa

PERIDROMA MANGARITOSA (HAW.)

Entomophthora aulicae

PERIDROMA SAUCIA (HBN.)

Sorosporaella uvella

PERIPHYLUS LYROPICTUS (KESS.)

Empusa fresenii

PETROPHORA SP.

Empusa apiculata

Empusa geometralis

PHALAEINIDAE

Beauveria globulifera

Isaria sp.

Sorosporaella uvella

Spicaria rileyi

PHENACOCOCCUS SP.

Empusa fresenii

Entomophthora fumosa

PHILONTHUS SP.

Synnematium jonesii

PHOLUS VITIS L.

Cordyceps sphingum

PHORMIA REGINA (MEIG.)

Empusa americana

PHORODON HUMULI (SCHR.)

Empusa aphidis

PHRYGANEIDAE

Empusa rhizospora

PHYLLOPHAGA ANXIA LEC.

Metarrhizium anisopliae

PHYLLOPHAGA CITRI SMYTH

Metarrhizium anisopliae

PHYLLOPHAGA DRAKEI KBY.

Metarrhizium anisopliae

PHYLLOPHAGA FERVIDA (F.)

Cordyceps militaris

PHYLLOPHAGA FUSCA (FROEL.)

Beauveria densa

Cordyceps melolonthae

Metarrhizium anisopliae

Ophiocordyceps acicularis

PHYLLOPHAGA FUTILIS LEC.

Metarrhizium anisopliae

PHYLLOPHAGA GUANICANA SMYTH

Metarrhizium anisopliae

PHYLLOPHAGA INVERSA HORN

Beauveria globulifera

PHYLLOPHAGA PORTORICENSIS SMYTH

Metarrhizium anisopliae

PHYLLOPHAGA RUGOSA (MELSH.)

Metarrhizium anisopliae

PHYLLOPHAGA SP.

Beauveria globulifera

Beauveria vexans

Cordyceps melolonthae

Cordyceps militaris

Empusa sphaerosperma

Metarrhizium anisopliae

Spicaria farinosa

PHYLLOPHAGA VANDINEI SMYTH

Metarrhizium anisopliae

PHYMATIDAE

Beauveria globulifera

PHYTALUS APICALIS BLANCH.

Metarrhizium anisopliae

PIERIS BRASSICAE (L.)

Empusa sphaerosperma

PIERIS RAPAE (L.)

Beauveria globulifera

Beauveria vexans

Empusa sphaerosperma

PINNASPIS MINOR MASK.

Septobasidium spongium

Sphaerostilbe aurantiicola

Tubercularia coccicola

PLAGIONGNATHUS SP.

Empusa crupta

PLATYPENA SCABRA (F.)

Spicaria rileyi

PLUSIA SP.

Beauveria globulifera

POLIA LEGITIMA (GROTE)

Cordyceps sp.

Sporotrichum minimum

POLIA RENIGERA (STEPH.)

Beauveria sp.

POLISTES AMERICANA (F.)

Cordyceps sphecocephala

Hirsutella saussurei

POLISTES ANNULARIS (L.)

Hirsutella saussurei

POLISTES LINEATUS (F.)

Cordyceps sphecocephala

POLISTES SP.

Hirsutella saussurei

POLLENIA RUDIS (F.)

Empusa muscae

POLYGONIA INTERROGATIONIS (F.)

Beauveria globulifera

POPILLIA JAPONICA NEWM.

Beauveria bassiana

Metarrhizium anisopliae

PORHETRIA DISPAR (L.)

Entomophthora sp.

Spicaria farinosa

PROCIPHILUS IMBRICATOR (FITCH)

Scorias spongiosa

PROCIPHILUS TESSELLATUS (FITCH)

Scorias spongiosa

PRODENIA ORNITHOGALLI GUEN.

Beauveria sp.

Spicaria rileyi

PRODENIA PRAETICA GROTE

Fusarium sp.

PRODENIA SP.

Aspergillus niger v.

Empusa sp.

PROTOPARCE SEXTA (JOHAN.)

Beauveria globulifera

Empusa grylli

Entomophthora aulicae

PROTOPARCE SP.

Beauveria globulifera

PROTOPULVINARIA PYRIFORMIS (CKLL.)

Cephalosporium lecanii

Hypocrella epiphylla

PSEUDAONIDIA DUPLEX (CKLL.)

Cephalosporium lecanii

Cladosporium sp.

Microcera coccophila

PSEUDOCOCCUS BONINSIS (KUW.)

Aspergillus flavus

Aspergillus parasiticus

Isaria sp.

PSEUDOCOCCUS CITRI (RISSO)

Empusa fresenii

Empusa lecanii

Entomophthora fumosa

Sphaerostilbe aurantiicola

PSEUDOCOCCUS NIPAE (MASK.)

Cephalosporium lecanii

Empusa fresenii

PSEUDOCOCCUS SP.

Aspergillus flavus

Aspergillus parasiticus

Aspergillus sp.

Entomophthora sp.

PSEUDODIASPIS YUCCAE (CKLL.)

Sphaerostilbe aurantiicola

PSOCUS SP.

Entomophthora chromaphidis

PSYLLA MALI (SCHMDB.)

Empusa sphaerosperma

PTILODACTYLA SERRICOLLIS (SAY)

Empusa apiculata major

PTYCHODES TRILINEATA (L.)

Empusa sphaerosperma

PYRAUSTA NUBILALIS (HBN.)

Acrostalagus albus

Aspergillus parasiticus

Beauveria bassiana

Beauveria globulifera

Hirsutella sp.

Spicaria farinosa

RHAGOLETIS COMPLETA CRESS.

Empusa grylli

Metarrhizium anisopliae

RHOPALOSIPHUM PRUNIFOLIAE (FITCH)

Empusa sp.

RHOPALOSIPHUM PSEUDOBRASSICAE (DAVIS)

Acrostalagus aphidum

Empusa aphidis

Empusa sp.

RHOPALOSIPHUM RUFOMACULATUM (WILSON)

Acrostalagus aphidum

RHOPOBOTA NAEVANA (HBN.)

Empusa sphaerosperma

RODOLIA CARDINALIS (MULS.)

Beauveria globulifera

SAISSETIA HEMISPHERICA (TARG.)

Aschersonia cubensis

Cephalosporium lecanii

Hypocrella epiphylla

Torrubiella lecanii

SAISSETIA NIGRA (NIETN.)

Cephalosporium lecanii

SAISSETIA OLEAE (BERN.)

Cephalosporium lecanii

Isaria sp.

Sphaerostilbe aurantiicola

SAMIA CECROPIA (L.)

Beauveria globulifera

Metarrhizium anisopliae

SAPROMYZA LONGIPENNIS (F.)

Empusa echinospora

SCAPTERISCUS ACLETUS R. & H.

Cordyceps sp.

Metarrhizium anisopliae

Sorospora uvella

SCARABAEIDAE

Cordyceps macularis

Cordyceps michiganensis

Cordyceps sobolifera

Metarrhizium anisopliae

Monilia penicillioides

SCATOPIAGA SP.

Empusa sp.

SCHISTOCERCA AMERICANA (DRURY)

Beauveria globulifera

SCHISTOCERCA PARANENSIS BURM.

Botrytis sp.

SCHIZURA CONCINNA (A. & S.)

Beauveria vexans

SCIARA SP.

Empusa sciarae

SCOLYTUS MULTISTRIATUS (MARSHAM)

Beauveria bassiana

SELENASPIDUS ARTICULATUS (MORG.)

Hornodendron sp.

Microcera coccophila

Microcera fujikuroi

Nectria diploa

Sphaerostilbe aurantiicola

SELENOTIRIPS RUBROCINCTUS (GIARD)

Beauveria globulifera

SIMULIUM VENUSTUM SAY

Empusa culicis

SIPHA FLAVA (FORBES)

Acrostalagmus albus

Acrostalagmus aphidum

Cladosporium sp.

SITONA HISPIDULA (F.)

Beauveria bassiana

Beauveria globulifera

SOLUBEA PUGNAX (F.)

Beauveria globulifera

SPIRAPHORUS SP.

Cordyceps sp.

SPHINGIDAE

Beauveria globulifera

Hymenostilbe sphingum

Rhizopus nigricans

SPHINX SP.

Cordyceps sphingum

Hymenostilbe sphingum

Saprolegnia ferax

STAPHYLINIDAE

Beauveria bassiana

Beauveria globulifera

STERNECIUS PALUDATUS CASEY

Fusarium sp.

STILPNOTIA SALICIS (L.)

Beauveria globulifera

Isaria sp.

Spicaria canadensis

STRATAEGUS BARBIGERUS CHAPIN

Metarrhizium anisopliae

STRATAEGUS QUADRIFOVEATUS BEAUV.

Metarrhizium anisopliae

STRATAEGUS SP.

Metarrhizium anisopliae

SYRPHIDAE (Syrphus sp.)

Empusa muscae

TACHINA SP.

Empusa muscae

TACHYTES ARGENTIPES SMITH

Cordyceps sphecocephala

TENEBRIONIDAE

Metarrhizium anisopliae

TENTHREDINIDAE

Beauveria globulifera

Empusa tenthredinis

TETRANYCHUS TELARIUS (L.)

Aspergillus depauperatus

THERA SP.

Empusa geometralis

THRIPIDAE

Beauveria globulifera

THRIPS TABACI LIND.

Empusa sphaerosperma

THYANTIA CUSTATOR (F.)

Beauveria globulifera

THYRIDOPTERYX EPIHEMERAIFORMIS (HAW.)

Beauveria vexans

TIBICEN VITRIPENNIS (SAY)

Cordyceps sp.

TIPHIA INORNATA SAY

Metarrhizium anisopliae

TIPULA INFUSCATA LOEW

Beauveria densa

TIPULA FLAVICANS F.

Empusa grylli

TIPULA SP.

Empusa caroliniana

Empusa conglomerata

Empusa dipterigena

TIPULIDAE

Beauveria densa

Empusa conglomerata

Empusa sepulchralis

Empusa variabilis

TOMASPIS POSTICA (WALK.)

Metarrhizium anisopliae

TOMASPIS SACCHARINA DIST.

Empusa sp.

Metarrhizium anisopliae

TOMICUS SP.

Isaria tomicii

TORTRIX SP.

Empusa apiculata

TOUMBYNILLA LIRIODENDRI (GMEL.)

Aschersonia cubensis

Hypocrella epiphylla

TOXOPTERA AURANTIAE (FONSC.)

Acrostalagmus aphidum

TRIALEURODES ABUTILONEA (WALD.)

Aschersonia aleyrodis

TRIALEURODES FLORIDENSIS (QUAINT.)

Aschersonia aleyrodis

TRIALEURODES VARIABILIS QUAIN.

Spicaria aleyrodis

TRICHOPARIS TEXANA LEC.

Beauveria globulifera

TRIMEROTHROPIS MARITIMA (HARR.)

Empusa grylli

TROPAEA LUNA (L.)

Hirsutella sp.

TYPHLOCYBA POMARIA MCATEE

Empusa sphaerosperma

TYPHLOCYBA SP.

Empusa apiculata

VESPA SP.

Beauveria globulifera

Cordyceps smithii

Cordyceps sphecocephala

Isaria sp.

VESPIDAE

Hirsutella saussurei

Hirsutella sp.

Hymenostilbe sphecophila

Ophiocordyceps humberti

VESPULA VULGARIS L.

Cordyceps ditmari

VINSONIA STELLIFERA WESTW.

Aschersonia turbinata

ZONOSEMATA ELECTA (SAY)

Fusarium sp.

- - - - -

ACARINA (SPIDERS)

Acremonium tenuipes

Beauveria densa

Cephalosporium sp.

Cordyceps dipterigena (on *Mydaea* sp.)

Cordyceps thaxteri

Gibellula araneorum (on *Attidae*)

Hymenostilbe arachinophila

Isaria atypicola

Isaria gigantea (on *Mygale cubana* Walk.)

Moniliopsis rigida

Sporotrichum columnare

Torrubiella gibellulac

- - - - -

FONTARIA CORRUGATA (WOOD) (A MILLIPED)

Entomophthora sp.

- - - - -

POLYDESMUS SP. (A MYRIAPOD)

Beauveria globulifera

THE FIELD STATUS OF PARASITES OF THE EUROPEAN CORN BORER
AT THE CLOSE OF THE 1940 SEASON

By W. G. Bradley and C. A. Clark, associate entomologists,
Division of Cereal and Forage Insect Investigations
Bureau of Entomology and Plant Quarantine
United States Department of Agriculture

In the fall of 1940, immediately subsequent to the establishment of seasonal equilibrium in the relationship between host and parasite, surveys were conducted to obtain information on the current status of parasites of the European corn borer. No attempt was made to randomize the location of sampling points over the entire area infested by the corn borer, because continuous observations throughout the years following the colonization of parasites have been such as to provide adequately reliable information on their dispersion characteristics. Commensurate with funds available, the areas surveyed were selected, therefore, with a view to obtaining the maximum information pertaining to (1) the fluctuations of parasite abundance at representative colony sites where dispersion restrictions had been determined previously, (2) abundance status, coupled with directional dispersion tendency and the extent of dispersion in areas where the parasites were still in the process of dissemination, (3) a qualitative and quantitative analysis of the parasite complex in both types of areas, (4) establishment of parasites at sample dispersion colony sites. With the data thus obtained for the current season, supplemented by the results of investigations in previous years, data are available to permit a close interpretation of the status of parasites throughout the entire infested area.

Collections of ectophagous parasites and the puparial remains of those which issued from their host and emerged prior to the time of collection, together with living borers which might harbor endophagous forms, were made at 16 points. The size and number of collections taken at each locality and the design utilized to locate the sampling point were determined by the type of information desired and the status of the introduced parasites prior to 1940 in the area to be surveyed. Host and parasite material from the Lake States (including the western portions of New York and Pennsylvania) and the Eastern States area were handled at the corn borer laboratories at Toledo, Ohio, and Moorestown, N. J., respectively. The results of observations in both areas are summarized in tables 1 and 2.

Table 2.--Corn borer parasitization in certain localities in the Eastern States at the close of 1940

State and locality	County	Area : Sq. mi.	Borers : observed	Parasites recovered				Total : Percent
				Lydella : griseus	Inareolata : punctoria	Macrocentrus : gifuenses	Chelonus : annulipes	
Connecticut:								
E. Hartford	Hartford	415	6,426	2.5	12.9	0	0.1	15.5
Haddam	Middlesex	7	479	7.9	4.0	0	0	11.9
Massachusetts:								
Agawam	Hampden	7	454	2.0	21.4	0	0	23.4
Barnardston	Franklin	7	196	2.6	0	0.5	0	3.1
Hadley	Hampshire	7	460	19.6	8.9	0	0	28.5
Northeastern	--	36	1,388	0.5	14.9	0.3	0	15.7
Southeastern	--	1,964	4,345	9.6	2.8	17.1	0.3	30.3
New Jersey:								
Atlantic	Monmouth	20	1,962	3.5	2.2	0.7	0	6.4
Burlington	Burlington	31	2,899	3.2	0	0	0	3.2
Virginia:								
Lee	Accomac	24	979	4.1	0	(1)	0	4.1
Total	--	2,513	19,588	--	--	--	--	--

1/ No release of this species at point indicated.

Status of Parasites

Lydella stabulans var. grisescens R.D. --- This tachinid is the most widely dispersed of the exotic corn borer parasites. In the Lake States it was the only parasite known to be attacking the corn borer in appreciable numbers up to the close of the 1940 season, and in this region it was present on for a limited distance inland in the vicinity of marshland bordering Lake Erie from the southern city limits of Detroit, Mich., to the Huron River west of Sandusky, Ohio. It is not known to have maintained itself near the marshland bordering any of the smaller lakes or ponds or at any other point in the Lake States area. The localities in which the parasite occurs comprise only a small part of the infested area, but at certain points as shown by the 1940 surveys and probably wherever marshland is abundant on the Lake Erie shore, high concentrations of the parasite exist. At Perkins Township, Erie County, Ohio, and at Erie Township, Monroe Co., Mich., two points selected as being representative of the Lake Erie marshland environment, a considerable increase in the percentage of parasitization by L. grisescens over that of 1939 was noted. At the former point one collection showed a parasitization of 85.1 percent, and the average for the area surveyed was 48.5 percent.

In the Eastern area L. grisescens was taken at all points surveyed and was either the most abundant or the second most abundant parasite in each case. In southeastern Massachusetts the percentage of parasitization was double that of 1939. In 11 of the collections from this locality over 25 percent of the borers had been killed by this dipterous parasite. In the Connecticut River Valley in Massachusetts, where Lydella grisescens was released in 1935, the 1940 surveys show the parasite to be well established. In central Connecticut in the vicinity of Hartford, this tachinid was slightly more prevalent west of the Connecticut River but was present in small numbers throughout the 415 square miles of the surveyed area. It was also found to be well established at Haddam, Middlesex County, Conn., where a release had been made in 1935. L. grisescens, released in Atlantic Township, Monmouth County, N. J., in 1935, was found to be well established, increasing, and spreading. At Burlington Township, Burlington County, N. J., a recently established release point L. grisescens was the only parasite recovered. Parasitization by it was low but considerable dispersion was evident. L. grisescens was also the only parasite reared from borers taken from the Lee, Accomac County, Va., locality.

Inareolata punctoria Roman. --- This ichneumonid parasite was recovered at only one point in the Lake States, namely, in the vicinity of the Cattaraugus Creek, in the Cattaraugus Indian Reservation, N. Y. The limited survey at this point did not permit exact definition of the area in which the parasite was present. Because the parasite has been recovered in this locality whenever observations have been made, and in view of the decided increase in its abundance since the last recovery in 1935, it appears probable that I. punctoria has become a permanent part of the fauna of the locality.

At the Erie Township, Monroe County, Mich., release point, where this ichneumonid persisted for 5 years following its last release, no recovery has been made for 3 years. However, since the parasite has been noted in miscellaneous collections in the vicinity of Toledo in 1938 and 1939, it is possible

that it is present in that locality and, since it has been widely colonized in the Lake States, it is possible that it is present at other colony sites.

In the Eastern States I. punctoria is almost as widely dispersed as Lydella grisescens and in some localities it is more abundant. In northeastern Massachusetts it was the most important parasite and killed 14.9 percent of the borers collected. It was reared from 94 percent of the collections obtained in this locality. I. punctoria was reared from 36 individual collections in southeastern Massachusetts and averaged 2.8 percent parasitization of all borers observed from this locality. The percentage of parasitization and the dispersion of the parasite into new areas showed a gain in 1940 over 1939. In 1939 the maximum parasitization recorded for this species in any collection from this locality was 10.8 percent. In 1940 parasitization by I. punctoria in 7 collections was equal to or above the 1939 maximum. I. punctoria was recovered from two of the three release points examined in the Connecticut River Valley in Massachusetts. At Agawam one collection of borers showed a parasitization of 35.8 percent and the average for the area surveyed at this locality was 21.4 percent. I. punctoria was released at Agawam and Hadley in 1936 and 1 year later at Bernardston, where no recovery was made in 1940. The release at the last-named site was made somewhat later in the season and synchronization may not have been accomplished. The area in central Connecticut, centering at Hartford, in which field-status studies of parasites were made in 1939, included 133 square miles. This was increased in 1940 to 415 square miles but, notwithstanding this large extension, it was found that the parasites had dispersed beyond the limits of the survey. I. punctoria was the most important parasite present and parasitized 12.9 percent of the 6,426 hosts observed. It was reared from 69, or 80 percent, of the individual collections. Twenty-seven collections of host larvae showed 20 percent or higher parasitization by I. punctoria. In the central 95 square miles of the area covered, borer parasitization by this species at the close of 1939 was 10.2 percent. In the same area at the close of 1940 it was 19.9 percent. Parasitization continued to increase up to the fourteenth host and parasite generation. (The parasite was released at Hartford, Conn., in 1934.) Data indicated that I. punctoria was spreading and increasing most rapidly in an easterly direction from the point of release. It seemed to be retarded in its dispersion toward the southwest, possibly because of the prevailing summer winds from that direction. At Haddam, Middlesex County, Conn., I. punctoria was found to be well established following a release of the species at this point in 1935. At Atlantic, Monmouth County, N. J., where I. punctoria was released in 1936, it was found to be well established, increasing, and spreading.

Macrocentrus gifuensis Ashm. -- A colony of this species was released at Adams Township, Lucas County, Ohio, in 1940, to test its reaction in an environment where the multiple-generation strain of the borer had become more prevalent than it was when the parasite was originally tested in this area. Initial establishment was shown by the recovery of two colonies of the species in the immediate vicinity of the release point. Initial establishment was also noted at two (Bernardston, Franklin County, and Concord, Middlesex County, Mass.) of the numerous dispersion colony sites founded in 1940 in the eastern area. In southeastern Massachusetts M. gifuensis was the most important parasite. It killed 17.1 percent of the 4,345 host larvae observed in the fall of 1940 as compared with 10.6 percent of the hosts observed in the fall of 1939. Borers

in 16 individual collections averaged 40 percent or higher parasitization by this species and the maximum parasitization of 71.1 was observed. It was reared from 83 of the 99 individual collections made and is known to be present over an area of approximately 1,700 square miles in southeastern Massachusetts. It was recovered east of the Canal on Cape Cod as far out as the town of Mashpee. Its spread westward has been comparatively slow. M. gifuensis, released in 1939 and 1940 at Atlantic, Monmouth County, N. Y., was well established at this point, and considerable dispersion was indicated by its recovery 2 miles from the point of release.

Eulophus viridulus Thoms. -- This gregarious ectophagous chalcid parasite was first released in the Lake States area in 1931 but no recovery was made until 1938. Since then surveys have shown that, although the parasite has spread, it has not notably increased in abundance at any point. During the 1939 season it had been found that E. viridulus had dispersed a considerable distance in the counties south of Toledo, Ohio. In order to check further on this spread observations were made in six counties not examined in 1939. These counties were Allen, Auglaize, Hardin, Logan, Seneca, and Sandusky. Only one observation per township was made and only a few townships in some of the counties were included in the survey. The parasite, however, was recovered in all counties under observation and it was indicated that at some points the species may be present in encouraging numbers. One colony was found over 50 miles from the nearest release point. The farthest limits of dispersion were not defined by this survey and, because of the limited observations, no dispersion direction tendency can be drawn from the data. No recovery of this species was made in the eastern area.

Chelonus annulipes Wesm. -- This braconid, released in 1938 in the multiple-generation area west of Toledo, Ohio, although showing strong establishment for 2 years, failed to appear in the 1940 collections from the Lake State area. In southeastern Massachusetts C. annulipes was not more abundant in 1940 than it was in 1937 and 1938 and less numerous than it was in 1939. The area from which it was taken remains rather limited. Parasitization of the borer by this braconid was only 0.8 percent and it was reared from only 7 of the 99 host collections from this locality; however, parasitization was over 10 percent in 4 of the 7 collections from which the parasite was reared. Since the parasite was present in rather large numbers in the fields from which it was taken and since these fields were more or less scattered and no individuals were reared from borer collections from intervening fields, it is indicated that C. annulipes is very selective in its choice of environment. This characteristic is further emphasized by the recovery of Chelonus at only 1 point in the Hartford, Conn., area, where a number of closely spaced releases had been made in 1939 and where the parasite had been recovered in 5 collections taken in the fall of that year.

Native parasites. -- The following native parasites appeared in small numbers in the 1940 collections: Aplomya caesar Ald. from the Lake States collections; and Carcelia ochracea V.d.W., Macrocentrus robustus Mues., Bassus agilis Cress., and Labrorychus prismaticus Nort. from the Eastern States.

Resume of Status of Parasites of European Corn Borer

at Close of 1940 Season

Lake States area. -- This area includes only the western portion of New York and Pennsylvanis. The 1940 fall survey indicates that in the Lake States area Lydella grisescens was the only parasite present in concentrations sufficiently high to be of economic importance and this status exists only in a narrow area bordering the marshland on the southwestern shore of Lake Erie. The species is not known to have maintained itself near the marshland bordering any of the smaller lakes or ponds or at any other point in the Lake States area.

Eulophus viridulus is present over a considerable part of the infested area in northwestern Ohio. The exact limits of its dispersion have not been determined but at no locality has it been found to be abundant.

Inareolata punctoria is present over a limited area in the vicinity of the Cattaraugus Creek, in the Cattaraugus Indian Reservation, N. Y. It was not recovered at any other point in the area in 1940, and, although, it possibly is present in extremely low concentrations at one or more points in the area (since it has been widely colonized), it is probably of no economic importance at any other locality in the Lake States.

Macrocentrus gifuensis was recovered at only one point in the area and there only as a result of a current season's release.

At present no exotic parasite other than those cited above is on a maintenance basis in the Lake States area nor does it seem probable that any other of the parasites imported to date will prove of value in the area where the one-generation strain of the borer is strongly predominant. It is known that over the greater part of the infested area in the Lake States no parasite, either native or of foreign origin, is present in numbers sufficient to be of any economic value.

Eastern States area. -- In the Eastern States, however, including eastern New York and Pennsylvanis, where the multiple-generation strain of the borer predominates, the picture of corn borer parasitization presents a different aspect. The surveys of 1940, together with those of recent previous years, show that the two parasites, Lydella stabulans var. grisescens and Inareolata punctoria, are present over a considerable part of the infested area. Of the many widespread dispersion colony points of these two species, good establishment was found at practically all of those which it was possible to examine in 1940. From sampling the dispersion points and from observations at the earlier established test points, it is known that these two species are present in considerable concentrations throughout eastern Massachusetts and Rhode Island, throughout the Connecticut River Valley from the Massachusetts-New Hampshire line to Long Island Sound, in Suffolk County on Long Island, and at one or more points in New Jersey. L. grisescens is present on the Eastern Shore of Virginia.

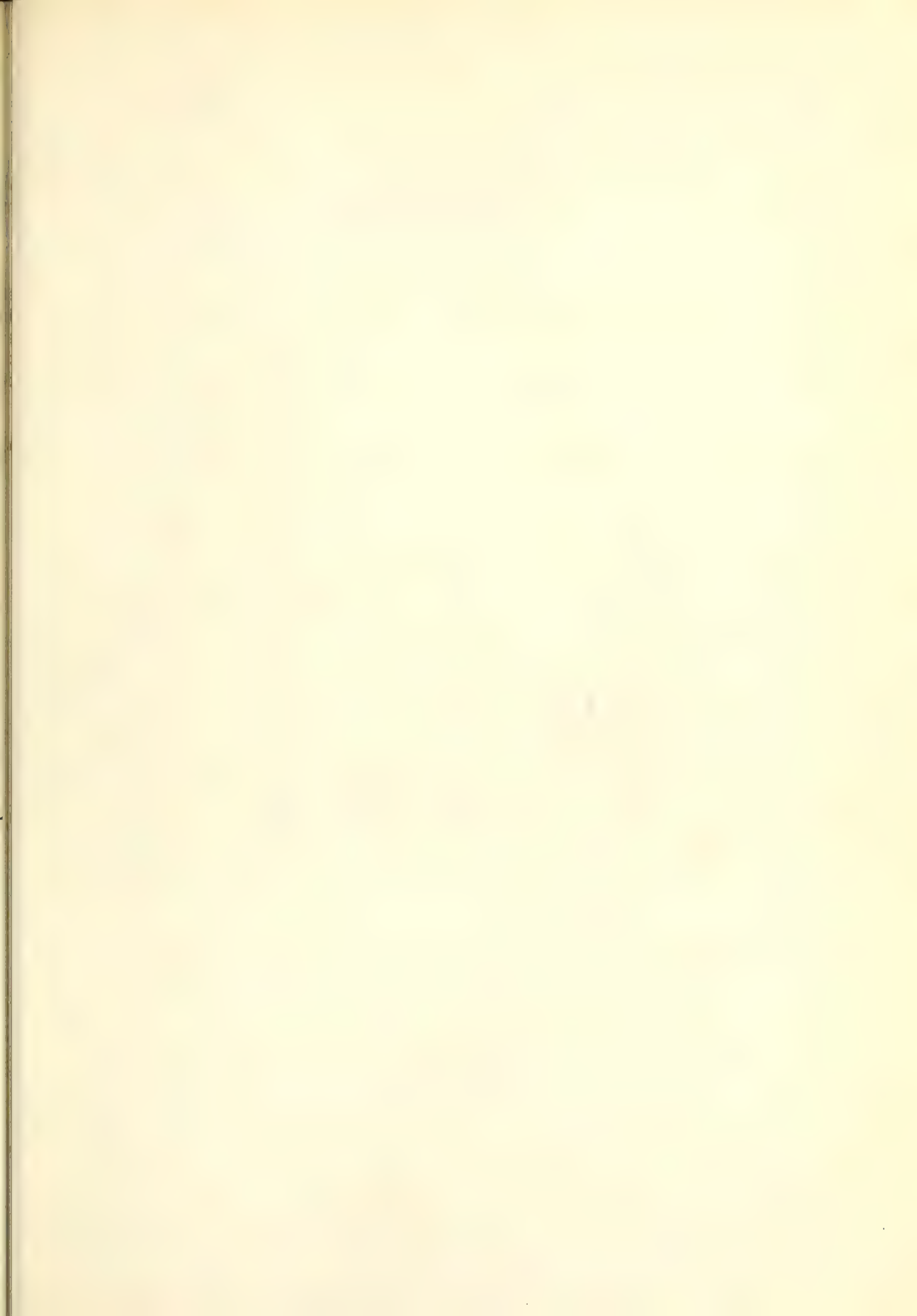
That Macrocentrus gifuensis shows promise of becoming one of the most valuable parasites in the multiple-generation area is shown by its performance in southeastern Massachusetts and, as demonstrated by the 1940 surveys, by its ability to become established under the varied environments of dispersion colonization.

Chelonus annulipes has not been found in abundance at any point, probably because of its apparent highly critical environmental requirements but, in view of its continued maintenance over a long period in southeastern Massachusetts, it seems probable that by close colonization, conditions favorable for its increase may be found in restricted ecological islands in the multiple-generation area.

Cremastus flavoorbitalis was taken at one point in Rhode Island in 1940 but observations do not offer promise of this parasite becoming of economic value in the regions where it has been colonized to date.

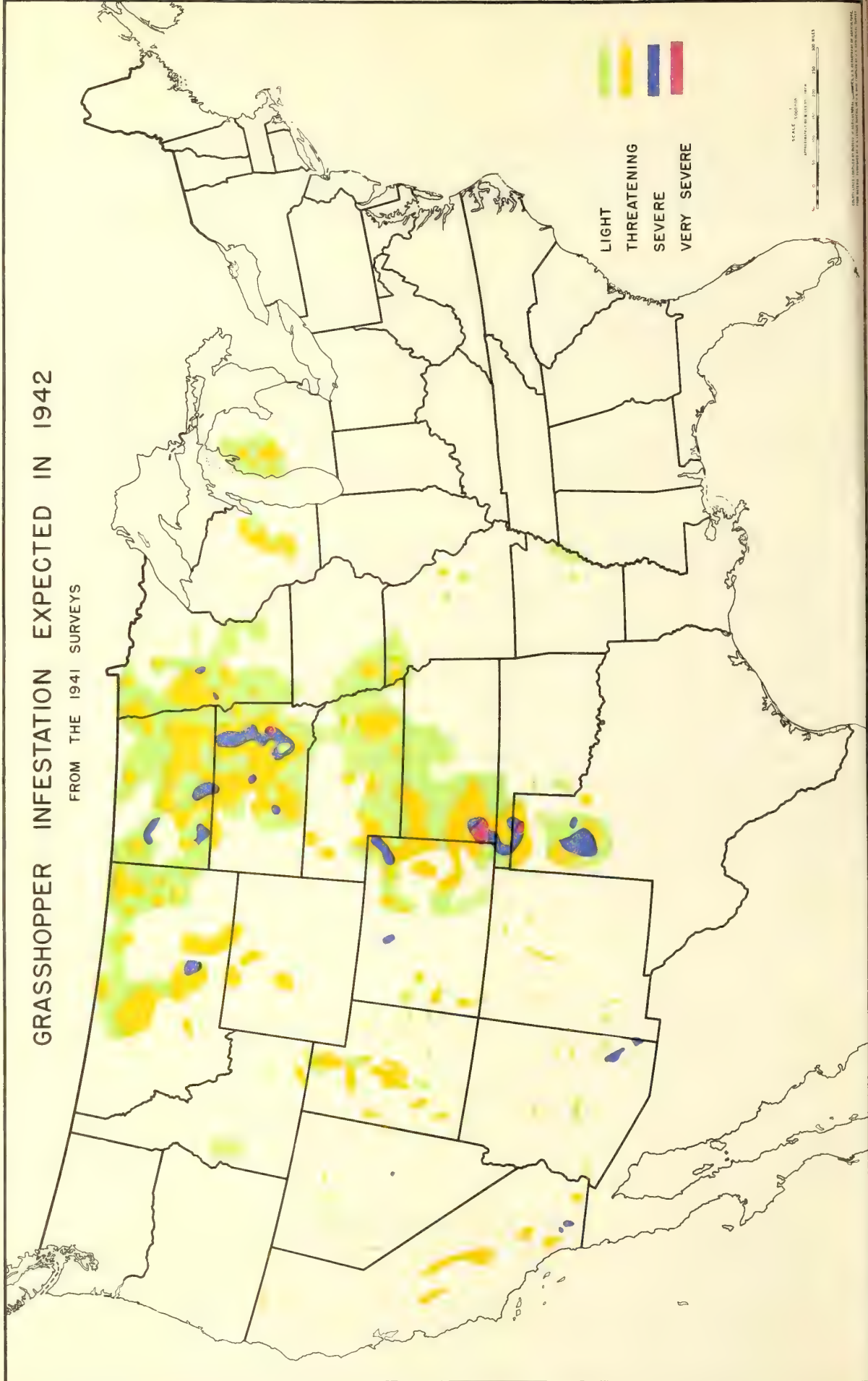
Observations in previous years have shown that Phaeogenes nigridens Wesm. is present in eastern Massachusetts. No surveys were made to check its current status, but, in view of the slow increase and spread shown by previous surveys, it is probably not of economic importance at any point.

Data available up to the close of the 1940 active season show that throughout the Lake States no parasites of the European corn borer are of economic importance except in a narrow strip bordering marshland along the southwestern shore of Lake Erie where Lydella stabulans var. grisescens is present in high concentrations. In the Eastern States three parasites, L. stabulans var. grisescens, Inareolata punctoria, and Macrocentrus gifuensis, are present in considerable abundance over the greater part of the more heavily infested areas and satisfactory establishment at sampled dispersion colony sites indicate that these three parasites are present throughout a considerable part of the entire infested area of that region.



GRASSHOPPER INFESTATION EXPECTED IN 1942

FROM THE 1941 SURVEYS



REMEMBER PEARL HARBOR

INTRODUCTION

Following the general trend of weather for the last 20 years, the year 1941 was warmer than normal in practically all parts of the country, the only exception being a limited area in the interior of the Northeast. The year was also outstanding for heavy precipitation. The latter half of the year was especially wet west of the Mississippi River, and the only States having deficiencies were those from North Carolina and Tennessee northward.

The winter was slightly colder than normal in parts of the Atlantic States, but in all other sections above-normal warmth prevailed, the plus departures being especially large in the western half of the country. From March to May, inclusive, temperatures were slightly below normal in the South and most of the Appalachian Mountain sections, but were substantially warmer than normal throughout the northern half of the country. While most of the western half of the country was well supplied with moisture during the winter and spring, precipitation was subnormal east of the Mississippi River, and drought prevailed in the Middle Atlantic and New England States.

The summer was warmer than normal generally and the fall very much warmer than normal, everywhere except west of the Rocky Mountains, where it was below normal. June brought rainfall generally to the drought area in the East to relieve the agricultural situation, but the rains were not heavy enough to penetrate deep and the subsoil remained relatively dry. Another drought set in the latter part of August, which by the first of October had assumed serious and widespread proportions, covering the entire Atlantic area and extending westward to the central Ohio Valley and Tennessee.

Insects in general passed the winter in the usual abundance. The boll weevil survived in more than normal abundance, and continued so throughout the season. The chinch bug also came through the winter in great numbers, but heavy spring rains in the infested area during the critical period of the insect's development reduced the population, and summer rains further reduced it.

The dry weather in area infested by the Japanese beetle retarded feeding of the larvae and overwintering populations went into hibernation with a low food reserve. The drought also is thought to have had a deleterious effect on the European corn borer.

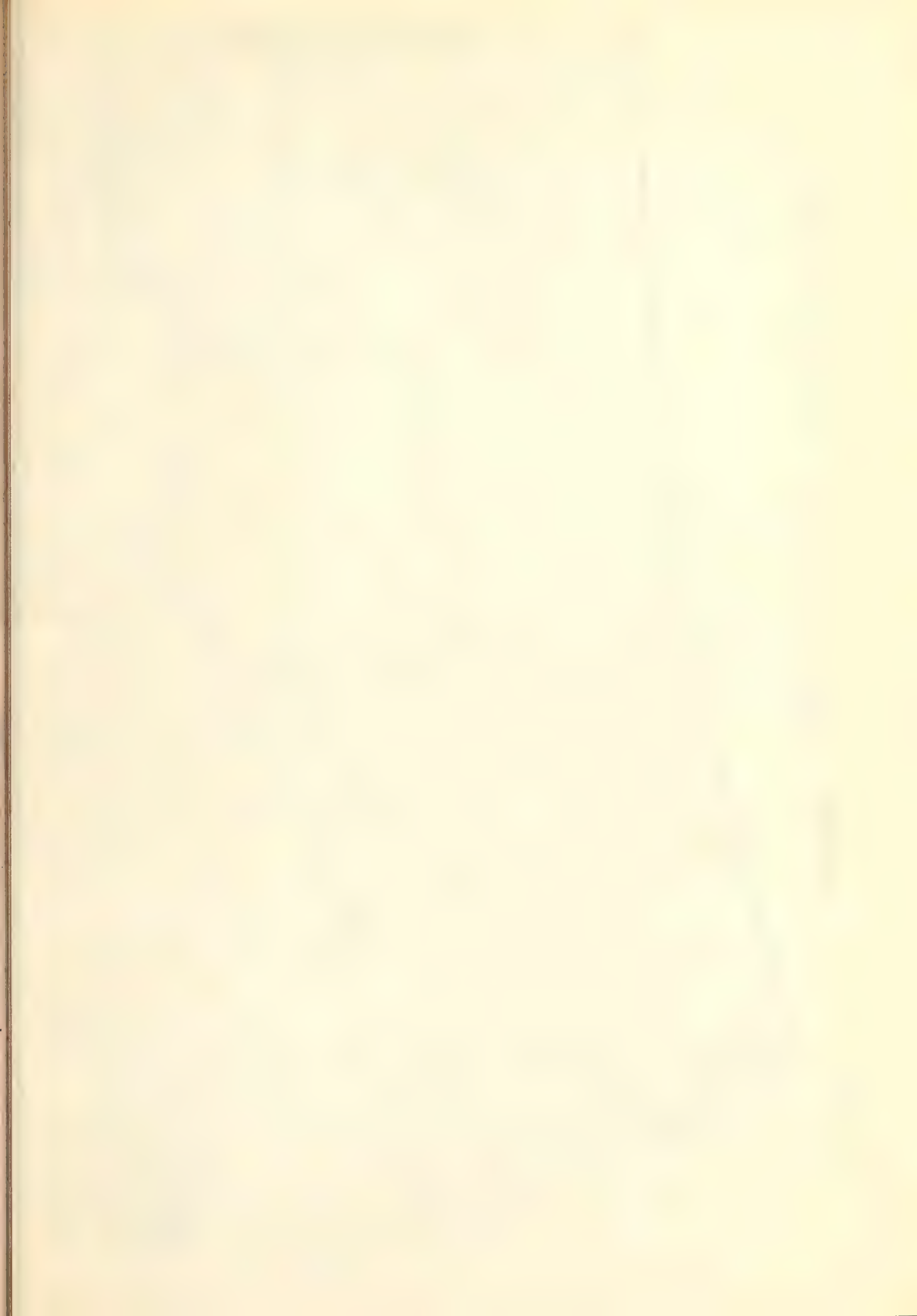
Rains in the grasshopper-infested area produced wild vegetation which served as food for the young 'hoppers and prevented them from migrating to crop

Because of the abnormally warm weather in the fall many insects continued development later than usual, providing abundant numbers for hibernation.

GRASSHOPPERS.—During the summer and fall of 1941 economic numbers of a second generation of Melanoplus mexicanus (Sauss.) developed in southeastern Arizona, southwestern Iowa, northwestern Missouri, southern Nebraska, eastern Colorado, western Kansas, the Oklahoma Panhandle, and the Texas Panhandle as far south as Lynn County. The second-generation area of Nebraska, Colorado, and Kansas had adult first-generation populations ranging from light to threatening. Nymphs of the second generation were first observed in Hamilton County, Tex., on June 23. Most of the hatch occurred during the month of August and was practically completed by September 5. In Kansas and Colorado, as in the 1940 season, many eggs developed rapidly to the point of hatching as early as August 15, then went into an aestivation period which carried them into the usual winter hibernation. Nymphal populations of the second generation reached a maximum about September 5, when populations were found to average 50 per square yard in alfalfa and 75 per square yard on the margins. Relatively smaller populations were found in small grains and weedy areas in crop land in Colorado. Throughout the remainder of the infested area populations in these environments averaged 15 per square yard in the fields and 30 per square yard on the margins. Mortality of nymphs was negligible over the entire infested area and second-generation nymphs developed rapidly, the average nymphal period being 6 weeks, and most of them had reached the adult stage on October 5. Nymphal migrations became general by September 10 and resulted in some marginal damage to fall wheat. Crop damage as a result of nymphal feeding was heaviest in alfalfa. First adults of the second generation appeared about September 1 and more than 90 percent were adults on October 5, approximately 10 days earlier than was the case in 1940 in this area. Flights were first reported on September 10 in Kansas and Texas. The flights were predominantly to the south and southwest, in the direction of the prevailing winds. The most extensive flights occurred on clear days when a northerly wind was blowing. The second-generation flight activity resulted in a general reduction of the populations in Nebraska, northern Colorado, and northern Kansas, and a general increased population in southwestern Kansas, eastern Baca County, Colo., to the Oklahoma Panhandle and most of the Texas Panhandle. Practically no previously uninfested areas, however, were infested as the result of flight. Oviposition became general over the area by October 1 and continued to about November 1 in Nebraska, Colorado, and Kansas, and to November 20 in Oklahoma and Texas. Egg surveys in the southern part of the second-generation area indicate that light to very severe infestations may be expected in 1942.

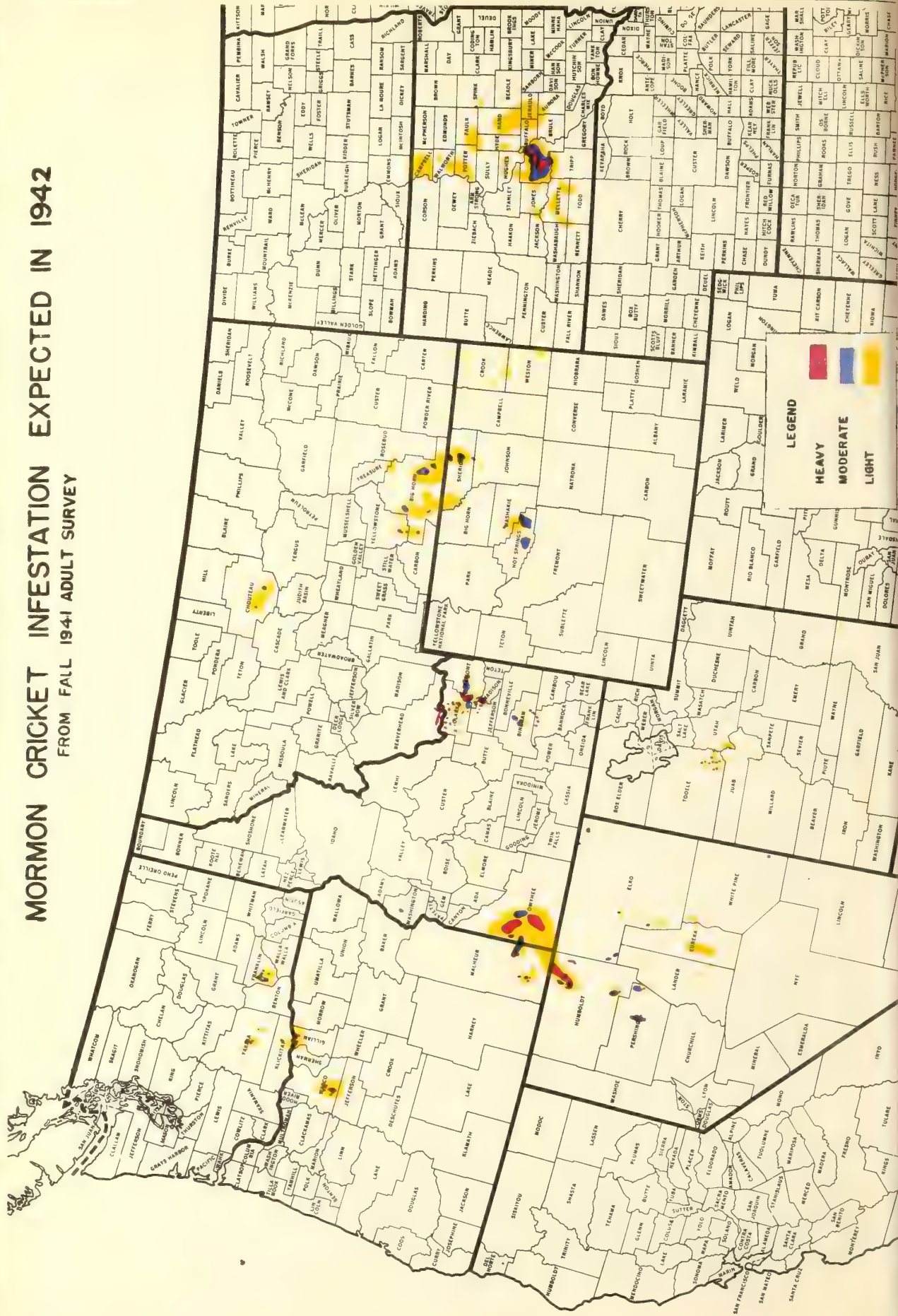
Aeoloplus turnbullii (Thos.) became reduced by disease to insignificant numbers in Kansas, southern Nebraska, and eastern Colorado. M. differentialis (Thos.) has increased in relative importance by populations building up in the northern part of South Dakota and in localized areas in southern North Dakota and Montana. M. bivittatus (Say) is the predominant species in marginal conditions in large areas in northwestern Minnesota, Montana, North Dakota, south-central South Dakota, and Wisconsin.

Grasshopper surveys conducted in the fall of 1941 indicate that threatening to severe infestations may occur in parts of Colorado, Kansas, Minnesota, Montana, Nebraska, North Dakota, Oklahoma, South Dakota, and Texas. Approximately 29,000 tons of bait have been estimated as needed for these States in 1942 and approximately 3,500 tons have been estimated for 12 other Western and Central States. The total estimate of 32,470 tons for 1942, as compared with



MORMON CRICKET INFESTATION EXPECTED IN 1942

FROM FALL 1941 ADULT SURVEY



an estimate of 46,539 tons for 1941 and an estimate of 118,157 tons for 1940, is indicative of the general decline in grasshopper populations. (R. A. Sheals, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

MORMON CRICKETS.—The size of the known infested area in Idaho has more than doubled. This is due to the inclusion of a large infested area in Owyhee County, which was not surveyed last season. The infested areas are on valuable desert range land and in the vicinity of small hay ranges. In eastern Idaho heavy and moderate infestations near cultivated areas are still present. The total acreage in Montana known to be infested has increased, but heavy and moderate infestations are less extensive than were recorded in 1940. Heavy infestations are located in Beaverhead County, along the Idaho State line, and in Big Horn County. Moderate infestations have developed in Chouteau and Yellowstone Counties. The heavily infested area in Nevada has decreased by approximately 500,000 acres and the moderately infested area in that State has decreased by nearly 400,000 acres. The most serious infestation in that State was the eastern part of Humboldt County.

Significant infestations of Mormon crickets in Oregon were found in the north-central counties of Jefferson, Wasco, Gilliam, and Sherman Counties. In South Dakota the moderate and heavy infestations are confined to Lyman County. During the 1941 season bonding and migrating of the Mormon cricket was observed. The size of the infested area in Utah is reduced over that of 1940.

Heavily infested areas in Washington are located in Franklin County. In Wyoming a general increase of both heavily and moderately infested areas was observed. More than half of the infested area is in the mountainous and non-agricultural parts of Hot Springs County. Other heavy infestations were located in Sheridan County, although it is not probable that the conditions in this county will be as serious as in 1937, 1938, and 1939. (C. Wakeland, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

EUROPEAN CORN BORER.—In 1941 considerable spread of the European corn borer was recorded west and southwest of the previously infested area in Wisconsin, Illinois, and Indiana, and toward the southeast in Pennsylvania, Maryland, Virginia, and North Carolina, extending the known distribution by 77 counties. In Wisconsin the infestation covers practically half of the State. About the same proportion of Illinois is known to be infested. First records were obtained in 9 counties in eastern Virginia, the infestation appearing in all of the counties along the Potomac River, and in several counties adjoining the older infestation of the State near the coast. European corn borer was also first recorded in Washington, D. C., in 1941, and in 1 county of North Carolina, on the southern border of Albemarle Sound. A detailed report of this insect, by A. M. Vance appears in Supplement to No. 9 of Volume 21 of the Insect Pest Survey Bulletin, dated November 8, 1941.

CHINCH BUG.—The hibernation survey made late in the fall of 1940 showed rather heavy infestations of bugs present from northern Indiana to southeastern South Dakota on the north, eastern Nebraska and Kansas on the west, and Oklahoma on the south. Relatively light winter mortality was reported from most of the infested area; however, heavy spring rains in 1941 during the nymphal development period of the first brood materially reduced the rather threatening general infestation to one of local moderate to rarely severe proportions over most

of the area. Outside the regular general chinch bug infested area slight local infestations by the first brood were reported from South Carolina and Mississippi. Heavy but spotted summer rains over most of the infested area apparently further reduced the second brood, but considerable local damage to corn and sorghum by this brood is reported from Missouri, Kansas, and Oklahoma. (P. Luginbill and C. Benton, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

Results of the chinch bug survey conducted during the fall of 1941 to determine the extent and intensity of chinch bug infestations in the States of Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, and Oklahoma indicate that infestations in 1942 will in general probably be considerably lighter than those of 1941. Appreciable infestation still exists in southwestern Iowa, southeastern Nebraska, northeastern Kansas, and northwestern Missouri, with scattered infestations varying in intensity in Oklahoma, Indiana, and Illinois. (R. A. Sheals, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

HESSIAN FLY.--Hessian fly populations were low throughout eastern, north-central, and western Pennsylvania, eastern Maryland, Delaware, northwestern and northeastern Virginia, northeastern Ohio, southwestern Michigan, northern Indiana, southwestern and south-central Nebraska, northwestern Kansas, and northern Oklahoma. There were menacing populations in local fields and areas in most of these regions. Outside of these areas and throughout the major winter Wheat Belt general and widespread increase of the hessian fly occurred during the year, extending from eastern Ohio and southeastern Michigan, over the southern half of Indiana and Illinois, across the greater part of Missouri into the eastern two-thirds of Kansas and the southeastern corner of Nebraska. A detailed hessian fly report by W. B. Cartwright appeared in Supplement to No. 6 of Volume 21 of the Insect Pest Survey Bulletin, dated August 15, 1941.

WHITE-FRINGED BEETLES.--Inspections conducted during the 1941 season were confined chiefly to work around the periphery of known infestations and to railroad lines and highways leading out of areas infested by Pantomorus spp. in the States of Alabama, Florida, Louisiana, and Mississippi. One new major infestation was found in the vicinity of Martin, in Dallas County, Ala. Isolated infestations were also found in that State at Ott, in Covington County; Toulminville, Crichton, Monroe, Grand Bay, and Irvington, in Mobile County; and at Flomaton, in Escambia County.

In Mississippi infestations were found for the first time at Brooklyn, in Forrest County; at Purvis and Lumberton, in Lamar County; and at Wiggins, in Stone County.

In Louisiana infestations were found in Covington, in St. Tammany Parish; and on Avery Island, in Iberia Parish.

These new infestations in the four affected States involve a total of approximately 9,450 acres. In addition to findings reported above, slight extensions of practically all areas of infestations found in previous years were recorded. The newly discovered areas in which infestations were found for the first time during 1941, added to previously known infested areas, constitute a total infested acreage, as of the close of the calendar year 1941, of approximately 96,500 acres. Inspection within the infested areas during 1941 indicates

a general reduction in beetle population to the point where economic damage to crops was very slight during the year. (R. A. Sheals, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

VETCH BRUCHID.—Sweepings in June in the known most heavily infested area west of the Cascade Mountains, in Clackamas and eastern Washington Counties, Oreg., and in Clark County, Wash., indicated that adults were about three times as abundant as they were in 1940. Surveys were made near the margins of the area found to be infested in 1940 by sweeping and examination of hairy vetch pods for eggs.

On the southern edge of the infested area, vetch weevil was found all through Polk County, both along the Willamette River and from 6 to 7 miles west, and west of the Eola Hills, along Highway 99W. In 1940 the weevil was not found along this highway south of McMinnville, in Yamhill County. Our most southerly record, west of the Willamette River, is in Benton County, 8 miles north of Corvallis and 3 miles south of the Benton-Polk County line. The weevil was also found in the northeast corner of Benton County 6 miles northwest of the bridgehead at Albany. This is the first record for Benton County and represents an extension of about 15 miles south of the 1940 findings. East of the Willamette River, in Linn County, the vetch weevil was found 2 miles south of Albany on Highway 99E but not near Tangent, 7 miles south of Albany. Going due east from Tangent, weevils were not found until 2 miles west of Lebanon, near Peterson's Butte and the foothills of the Cascades. None were found 5 miles south of this point, just south of Peterson's Butte. The findings of this survey represent an extension of about 10 miles south of the limits found in 1940.

On the northern edge of the infested area the vetch bruchid was found for the first time north of the Lewis River in Cowlitz County, Wash., at Woodland, but no farther north. On the west bank of the Columbia River, north of Portland, the vetch weevil was found about the same distance north, 3 miles north of Saint Helens, in Columbia County, Oreg., but not in the Nehalem Valley, in the Coast Range. This represents an extension of about 10 miles north of 1940 limits on the Oregon side of the river. (L. P. Rockwood and M. M. Reesher, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

LEGUME WEEVIL.—That fairly heavy oviposition by the legume weevil (*Hypocis brunneus* Boh.) had occurred in alfalfa was indicated by field studies made in December and early in January. Larvae had not yet appeared on January 8. Incubation apparently was being delayed by cool, frosty weather during the above-mentioned period. Cage studies indicated that incubation required a week longer this season than was the case in 1941. A first sampling of sourclover on January 4, revealed a larger population of adults than existed in alfalfa. Owing to this and to general heavy oviposition in December 1941, a tremendous accumulation of eggs resulted, about 400 eggs to the square foot but, as in alfalfa, the eggs had not yet hatched. (W. C. McDuffie, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SUGARCANE BORER.—From January to March 1941, inclusive, there were only 6 days at Houma, La., during which the temperature was freezing or below. There were 21 such days in 1940, only 3 such days in 1939, and from 6 to 8 days per year for these months in 1936-38. As a result, the number of borers surviving

the winter in Louisiana was about normal, being several times greater than in 1940, but somewhat less than in 1939; however, the number of first-generation borers found in fields was about equal to that in 1939. The percentage of joints of sugarcane found bored in Louisiana at harvesttime in 1941 was estimated at 20.16. This estimate is based on a systematic survey conducted jointly with A. L. Dugas, of the Louisiana Agricultural Experiment Station. Estimated percentages of joints bored in the 6 previous years, based on similar surveys, were: 1940, 5.3; 1939, 19.7; 1938, 15.9; 1937, 16.1; 1936, 8.7; and 1935, 8.1. In limited examinations made in southern Florida in September, in cooperation with J. W. Wilson, of the Florida Agricultural Experiment Station, the infestation in the vicinity of Clewiston was found to be somewhat lighter than in previous years, and in the Canal Point area the infestation was somewhat heavier. The infestation in the Fellsmere area was lower than average and it was apparent that the 68 percent larval parasitization by Lixophaga diatraeae Towns. and Bassus stigmaterus Cress. had been a factor in reducing the infestation. W. A. Douglas, in surveys to determine the borer infestation in rice, found the infestation in Texas to be the lowest on record, and the Louisiana infestation to be lighter than normal. (J. W. Ingram, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BLACK GRAIN STEM SAWFLY.--During the summer of 1941 Trachelus tabidus F. was found in greater abundance in southern Virginia than at any previous time and reached within about 10 miles of the North Carolina border. However, surveys of wheatfields in North Carolina showed no signs of it having reached this State. The following tabulation summarizes the results of the survey by counties and shows the average percentage of culms infested in samples taken from several fields in each of the following counties:

Delaware. July 21:

Kent and New Castle ----- 2

Maryland. July 11 to 22:

Baltimore ----- 2
Carroll ----- 13
Cecil ----- 1
Montgomery ----- 23
Washington ----- 3

Pennsylvania. July 11 to 17:

Franklin ----- 4
Huntingdon ----- 3

Virginia. June 14 to 28:

Augusta ----- 1
Campbell ----- 10
Caroline ----- 0
Essex ----- 1
Fauquier ----- 2
Halifax ----- 6
Hanover ----- 3
King George ----- 7
Loudoun ----- 5

Virginia. June 14 to 28: (Continued)

Pittsylvania -----	1
Prince William -----	2
Rockbridge -----	2
Rockingham -----	2
Shenandoah -----	2
Westmoreland -----	8

EUROPEAN WHEAT STEM SAWFLY.--On July 11 to 21, 1941, Cephus pygmaeus L. was not found south or west of Frederick and Carroll Counties, Md., where examination of 8 wheatfields showed an average culm infestation of 6 percent. From June 23 to July 17 it spread over most of the eastern half of Pennsylvania. The following tabulation summarizes the results of a survey by counties in Pennsylvania and shows the average percentage of culms infested in samples taken from several fields in each of the following counties:

Pennsylvania. June 23 to July 17:

Adams -----	5
Berks -----	8
Bucks -----	10
Centre -----	14
Chester -----	6
Cumberland -----	8
Lancaster -----	11
Lebanon -----	9
Lehigh -----	10
Lycoming -----	4
Mifflin -----	2
Montour -----	6
Northumberland -----	7
Perry -----	3
Union -----	1
York -----	1

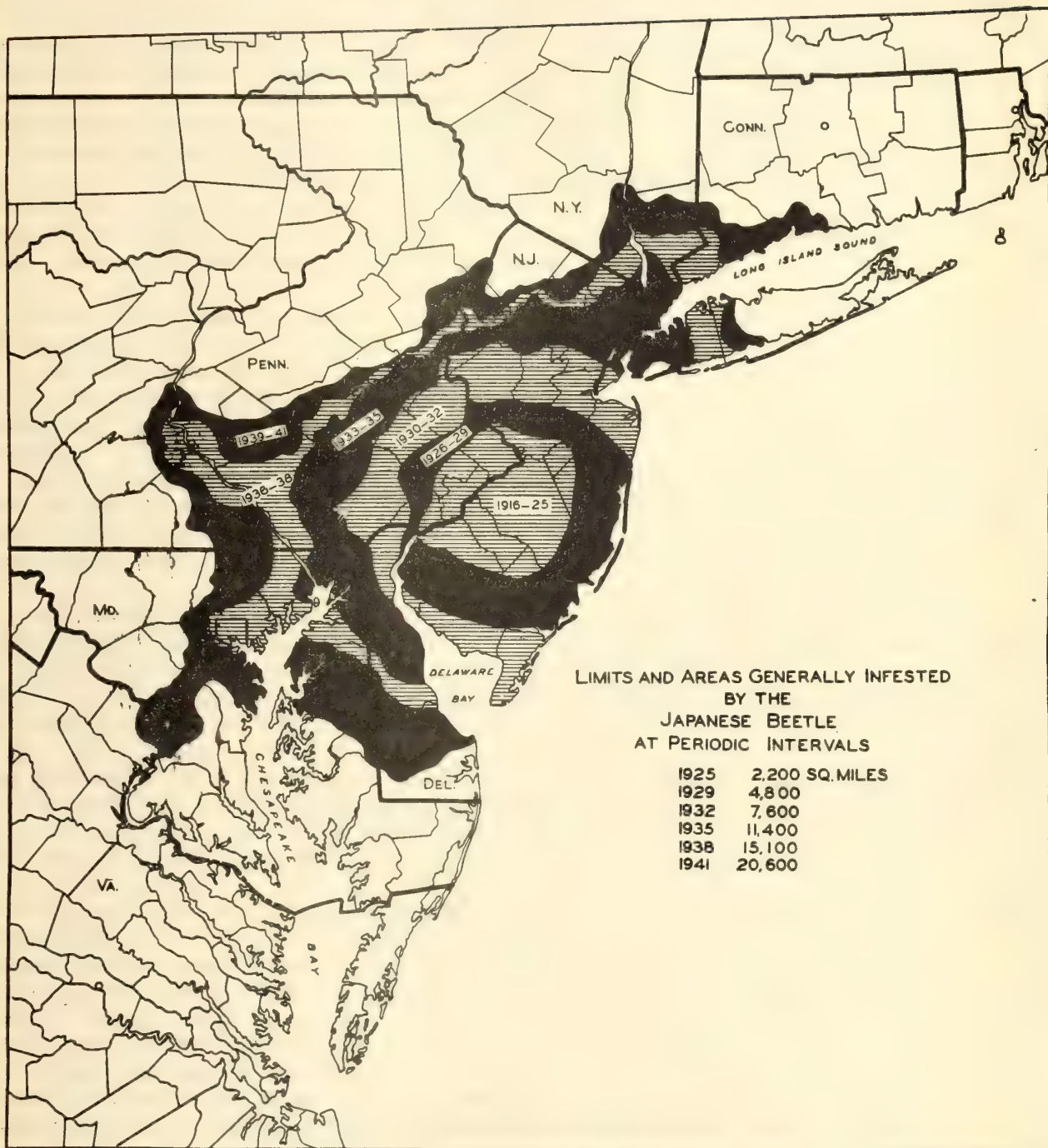
JAPANESE BEETLE.--The 1940-41 brood of the Japanese beetle was characterized by approximately normal spring development of the overwintering brood. Throughout most of the generally infested area abundant and well-scattered precipitation in June and July favored normal pupation and emergence, as well as providing optimum conditions for oviposition of the current brood. Emergence in the Philadelphia area began about the middle of June and was well under way by the first of July. Weather conditions late in June and in July were generally unfavorable for normal flight and feeding activity, particularly in July, during the latter month measurable precipitation was recorded on 17 days, whereas only 10 days were recorded as clear. As a result of those meteorological conditions the usual adult-beetle activity was less apparent. Furthermore, because of rapid foliage growth, beetle injury, while generally developing normally, was much less evident throughout many parts of the generally infested area. Weather conditions generally were unusually favorable for oviposition during July, when normally approximately 90 percent of the eggs are laid. Most of the soil population was in the second instar before drought, which was general throughout the beetle area during the remainder of the year, became acute. Serious drought was general throughout the generally infested area, beginning late in August and extending throughout the remainder of the larval-feeding

period. As a result, late-season larval feeding was much retarded and the overwintering population generally entered hibernation with low food reserve. In this situation if the winter of 1941-42 proves to be unusually severe, winter mortality of larvae is likely to be higher than normal.

Scouting operations conducted during the adult Japanese beetle season in 1941 revealed that the following are some of the more important trends and developments: The most consistent general dispersal appears to be in the southern and southwestern parts of the generally infested area, involving southern Delaware, northeastern Maryland, and York County, Pa. A fairly rapid dispersal is also evident in the extreme northeastern part of the insect's range, an area involving lower New York State and southwestern Connecticut. The most severe infestations were found in the northern half of Delaware, northeastern Maryland, and portions of Chester and Lancaster Counties, Pa. Somewhat less severe infestations were noted in the lower half of Westchester County, N. Y., while locally rather severe infestations appeared at several points in northern New Jersey and in northern Nassau County, on Long Island. Throughout the most of New Jersey, the older infested sections in Pennsylvania, as well as Staten Island and New York City and Brooklyn proper, the infestation was less than that observed in 1939. Two important secondary centers of dispersal were absorbed during the current season, one being the District of Columbia and the area immediately surrounding it, while the second was the New Haven infestation. The survey of a number of important secondary centers of infestation situated relatively close to the area of general infestation revealed the increasing importance of such points as agents of dispersal and as factors in increasing materially the area considered generally infested. In 1941 the area of general infestation was estimated to occupy approximately 20,600 square miles, an increase of 4,300 square miles over the 1939 estimate. This area was distributed among the several States involved, as follows: Connecticut, 620 square miles; New York, 1,722 square miles; New Jersey, 7,431 square miles; Pennsylvania, 6,114 square miles; Maryland, 3,016 square miles; Delaware, 1,550 square miles; Virginia, 85 square miles, and the District of Columbia, 62 square miles. Obvious injury to the foliage of tall trees, although varying widely in intensity and extent, was evident in roughly half of the area considered as generally infested.

A graphic periodic summary of the general dispersal of the Japanese beetle from the original center of infestation at Riverton, N. J., is shown on the accompanying map. With the exception of the period 1925-29, all the intervals graphically represented are 3-year intervals. An inspection of this map reveals very clearly that the dispersal has been more rapid in a general south-southeast direction into Delaware, Maryland, and southeastern Pennsylvania, as well as northeast into lower New York and western Connecticut, than it has in a general northwest direction into Pennsylvania. It is evident that the spread was more rapid as the general advance encountered the larger river valleys, particularly the Susquehanna, the Delaware, and the Hudson. The extensively traveled highways extending south of the heavily infested areas also appear to have played an important part in accelerating the rate of dispersal in that direction. (C. H. Hadley and T. N. Dobbins, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

CODLING MOTH.--Winter survival of codling moth was high everywhere except in Delaware, where the mortality was approximately twice that usually recorded. Emergence of spring-brood moths was considerably in advance of last year and



LIMITS AND AREAS GENERALLY INFESTED
BY THE
JAPANESE BEETLE
AT PERIODIC INTERVALS

1925	2,200 SQ. MILES
1929	4,800
1932	7,600
1935	11,400
1938	15,100
1941	20,600



began on April 14 in Washington; the last week of April in Delaware, Georgia, and Indiana; the first week of May in Pennsylvania, Maryland, Virginia, West Virginia, Kentucky, Ohio, Missouri, and Kansas; and on May 8 in New York. In New Jersey and Pennsylvania cool, wet weather during June and July partly offset the early development and made conditions favorable for control of the first brood. In general, the season was favorable for codling moth development and warm, dry weather of August and September caused a rapid build-up of second and third broods. Codling moth injury appeared to be less than usual in Delaware and Washington, generally not severe in well-sprayed orchards in Kansas and Missouri, moderately severe in New Jersey, and unusually severe in Virginia, Georgia, Arkansas, Ohio, Kentucky, Indiana, and Illinois. A high population of larvae went into hibernation quarters late in the season as a result of the favorable weather for build-up.

PLUM CURCULIO.—The mortality of hibernating plum curculio adults at Fort Valley, Ga., was unusually low. The first-brood infestation was heavier than that of last year and the larvae left the drops earlier. Curculio development was somewhat earlier than normal and peach development somewhat later. As a result, the midseason varieties of peach, as well as the later varieties, were subjected to a heavy infestation by larvae of the second brood and the hibernating population was heavier than normal. Heavy damage to late peaches and plums occurred in Mississippi, the second generation was unusually abundant and the infestation in Elbertas was high in Kentucky, and in Ohio the infestation was unusually abundant in peach and also occurred in plums.

MEXICAN FRUITFLY.—The annual influx of adults of the Mexican fruitfly (*Anastrepha ludens* Loew) appeared in the citrus groves of the Rio Grande Valley, as usual, during the late fall and early winter of 1940, following the dispersal from its native host, *Sargentia greggii*, through northeastern Mexico of the largest population on record. The first larval infestation of the 1940-41 fruit season was found on November 15, 1940, but no further fruit infestation occurred until February 12, 1941. After March 1, 1941, fruit infestations were disclosed in all districts except at Laredo and in the Winter Garden area. The largest number of adults and larval infestations occurred in the western end of the lower Rio Grande citrus area, as has been noted in previous years.

The season was apparently below normal with respect to the number of adults trapped and larval infestations found in the groves. A total of 979 flies was trapped during the 1940-41 season, as compared to 6,157 during the 1939-40 season and 13,687 during the 1938-39 season. Owing to unfavorable weather conditions, the harvesting season for grapefruit and oranges was extended to May 31, 1941, but despite this extension larval infestations were found on only 552 properties during the season. During the 1939-40 season, 582 larval infestations were disclosed, and 2,141 were found during the 1938-39 season. The host-free period began on June 1, 1941, with the tree-to-tree clean-up, and the population of adults dropped immediately. No adults have been trapped since August when 3 flies were captured at Laredo. There was no further spread of the Mexican fruitfly during the season.

The 1941-42 fruit season began with apparently a complete absence of flies from the groves. For several years adults have shown up in the groves in November and December, but in November and December 1941 no flies were trapped

in the entire area. From observations it is known that a small population of Mexican fruitfly developed last summer in northeastern Mexico, and this is no doubt reflected in the continued absence of flies from the citrus groves in Texas during the present season. (P. A. Hoidale, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BEET LEAFHOPPER.—September surveys of representative summer breeding areas in southern Idaho in 1940 showed the largest fall population of beet leafhoppers recorded during the last 4 years. The acreage of Russian-thistle, the most important summer breeding host, was below normal but generally in good condition with very little premature drying. Fall surveys in the Sailor Creek sagebrush area, one of the important overwintering and spring breeding areas, showed the largest late-fall population of beet leafhoppers since 1937. Above-normal temperature and excessive precipitation in September 1940 were very favorable for fall germination of the fall and winter host plants of the beet leafhopper throughout southern Idaho. This early fall germination occurred before the summer host plants had matured or were killed by frost; consequently, there was no break between the summer and fall host-plant sequence. The winter of 1940-41 was, in general, comparatively mild with a slight deficiency in precipitation. The lowest temperature recorded was 1° below zero, which occurred at a time when the soil was protected by a blanket of snow and indicated that weather conditions were favorable for survival of the beet leafhopper and its winter host plants. Spring surveys in the spring breeding areas showed the largest population of overwintered beet leafhoppers recorded since 1938. Excessive precipitation in April added sufficient soil moisture to stimulate growth of the widespread and abundant spring breeding host plants. The number of leafhoppers in the spring movement in 1941 was approximately two-fifths larger than in 1938, 17 times larger than in 1939, and one-third larger than in 1940. Surveys of commercial beanfields in July showed that curly top injury to beans ranged from 1.0 to 59.75 percent, with an average of 12.88 percent in the garden varieties grown for seed and from 0 to 58.25 percent, with an average of 10.22 percent in the Great Northern, a dry-bean variety grown extensively in southern Idaho. Fall populations of the beet leafhopper in southern Idaho in 1941 were the lowest recorded since the institution of the extensive fall population survey in 1934. This was due in part to the lowest recorded equivalent acreage of Russian-thistle during the last 7 years. Russian-thistle, the most important summer breeding host, has been partially or entirely replaced by downy chess, a non-host, over large areas. Seasonal study on the development of the beet leafhopper on summer host plants shows a gradual decrease in leafhopper populations since about the middle of July. Dissections of fall-collected females from representative summer breeding areas showed that the percentage of parasitization ranged from 7.6 to 45.2 percent, with an average of 27.6 percent. Although this indicates that parasites were a factor in limiting reproduction of the beet leafhopper, their effect would not be sufficient to account for the gradual decrease in populations during the latter half of the active season. Patchy germination of fall and winter host plants occurred about the middle of August as a result of heavy local showers during the month, but there was a very poor survival of these weeds during September and October. A generally widespread germination occurred about October 26 and, as a result, the leafhopper entered the winter of 1941-42 under favorable conditions. (J. R. Douglas, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

Normal fall populations of beet leafhoppers were present for hibernation in the northern Utah breeding areas in 1940; however, very few survived the winter. With low overwintered populations and adverse weather conditions during April and May a very low spring brood was produced. The long-distance migration coming into Utah from Arizona, southern Utah, and Nevada in 1941 occurred in May. This was 3 weeks later and only 20 percent as large as the corresponding April movement of 1940. The local migration started May 25 in 1941. This was 1 week later and about 4 to 5 percent as large. Only 33 percent of the local migrant leafhoppers were viruliferous. The beet leafhoppers in northern Utah transmitted curly-top disease to 12 percent of the sugar beets and to 7 percent of the tomatoes in 1941, as compared to 65 and 52 percent, respectively, for sugar beets and tomatoes in 1940.

The acreage of Russian-thistle was slightly increased in 1941, but below-normal precipitation during August and September caused much of it to dry up, particularly the dense stands. Beet leafhopper populations produced during the summer and fall of 1941 were 16 percent as large as in 1940. Fall and winter host plants in all areas germinated in October and are in good condition. (Walter E. Peay, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

The beet leafhopper infests fields of beets grown for seed in the fall, both in the Salt River Valley of Arizona and in Mesilla Valley, N. Mex. Very little curly top was found in beet-seed fields of the Salt River Valley late in April 1941 from a small infestation the previous fall. In Mesilla Valley curly top by April 1941 was severe in fields with the thinner stands, resulting from a moderate infestation the previous fall, especially in fields that had not been sprayed for leafhopper control. Infestations of the beet leafhopper, which occurred the fall of 1941 in beet-seed fields of both the Salt River Valley of Arizona and Mesilla Valley, N. Mex., were considered injurious only to the thinner stands. In both districts spraying was done in October to reduce curly top damage. (V. E. Romney, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

In California the spring migration of the beet leafhopper occurred in numbers above the average but was much smaller in magnitude than in 1940. A small second brood developed in the central part of the San Joaquin Valley and moved into the Sacramento Valley during May. Very little damage to sugar beets was reported.

In the central part of the San Joaquin Valley, where early tomatoes are planted close together and grown on stakes, only about 3 percent of the plants suffered damage from curly top. In the remainder of the San Joaquin Valley and Sacramento Valley very little curly top damage occurred on tomatoes. (W. C. Cook, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

PEPPER WEEVIL.—The 1941 season in southern California followed a second warm winter. Numerous live and active weevils were found on nightshade throughout the winter and early part of the spring. Pepper blossom buds were infested in the seed bed before transplanting. Heavy infestations in the field were observed early in June. One field of chili peppers, from plants grown very early in a greenhouse, had many infested pods in June. Two early fields were so badly damaged that they were plowed up. Heavy infestations occurred in fields of chili, paprika, pimiento, and sweet peppers in all pepper-growing areas from San Diego to Ventura. The infestation continued throughout the

season, and in the untreated fields production was reduced to almost nothing. In fact, none of these untreated fields produced more than one-third of the regular crop. Most of the growers, however, treated their fields with a 50-percent cryolite dust, containing 0.5-percent rotenone, which was added to prevent the development of aphid infestations. A very satisfactory pepper crop was obtained in the fields so treated.

There has been a considerable demand in recent years for potted ornamental peppers, especially at Christmas time. A report was received this season of an entire greenhouse full of these plants being so badly damaged by the pepper weevil that all pods were lost, and hence the plants made valueless.

New areas reported infested for the first time by the pepper weevil in 1941 included Temecula, in Riverside County, Calif., and Phoenix, Ariz. (See also report of infestation from Nueces County, Tex. Insect Pest Survey Bull. No. 8, p 594.) (Roy E. Campbell and J. C. Elmore, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

PEA WEEVIL.—The average pea weevil infestation in the Palouse area of Idaho and Washington, as determined from 2,119 weevil-infestation records obtained from the Seed Division of the Agricultural Marketing Service, involving 1,136,322 sacks of peas or approximately 159,085,000 pounds of dry peas, was 4.49 percent. In 1940 it was 4.06 percent. The average for all crops sampled in Washington during 1941 was 4.36 percent, whereas in 1940 it was 4.17 percent. In Idaho the average for all points in the Palouse area for 1941 was 4.96 percent, while in 1940 it was 3.75 percent. These figures show that there was an increase in the average infestation for the region as a whole of 0.43 percent. The increase in Washington for 1941 over 1940 was 0.19 percent, while in Idaho it was 1.21 percent. These increases, recorded in spite of the fact that at least 1,000,000 pounds of dust containing rotenone was used to control the pest, can be attributed to unfavorable weather conditions that prevailed during the dusting season and to the fact that the winter of 1940-41 was the fourth consecutive winter favorable for weevil survival. (T. A. Brindley, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

POTATO PSYLLID.—Surveys on all of the important host plants in Nebraska and Wyoming showed significant increases in abundance of potato psyllids in 1941 from 1940. Initial infestations in May were larger and somewhat earlier than normal. Populations on potatoes growing in cull-tuber dumps in the North Platte Valley of Wyoming and Nebraska reached a peak of 107.4 adults per 100 sweeps on July 2, and after these plants dried up in the middle of July provided an important source of infestation to late plantings of potatoes and tomatoes. On matrimony vine populations reached a peak of 73.6 adults on June 25. On wild groundcherry psyllid adults reached a peak of 15.6 on July 9, as compared with 5.6 at the peak of infestations on July 10, 1940. Infestations on early planted potatoes increased rapidly the first 2 weeks in July and reached a peak of 14.7 adults per 100 sweeps on July 16. The damage to untreated early plantings was 100 percent. Populations on later plantings of potatoes were approximately one-third of that on the early crop, but were about 3 times the number on the same crop in 1940. On tomatoes adult populations reached a peak of 5.6 per 100 sweeps on July 2, but declined to 1.2 on July 23, owing to hot weather. Following this a build-up to 7.3 on August 20 was recorded. A killing frost on September 8, 18 days ahead of the normal time of

first killing frost, prevented a large build-up in September on late plantings of potatoes and tomatoes. Infestations in the high-altitude area at Laramie, Wyo., did not develop until the first week in July, but following this a continuous and enormous build-up occurred, reaching a peak of 34.8 adults per 100 sweeps on August 26, as compared with 84.1, the peak of infestation on September 13, 1940. Psyllid populations reached a high point of 16.4 adults per 100 sweeps on September 5, on dry-farmed potatoes in southeastern Wyoming, as compared with 2.5, the peak of infestation in that area on September 20, 1940. (R. L. Wallis, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

VEGETABLE WEEVIL.--The vegetable weevil, which first attacked tobacco plants in the seedbeds at Quincy, Fla., in 1937, has continued to infest the bed each season. The infestation in 1941 was of sufficient intensity to require control measures on many of the beds. While the effect of these control remedies made it difficult to determine the potential abundance of the pest on plant beds, observations in turnip fields and on other host crops indicated that the vegetable weevil was somewhat more abundant than in 1940.

All observations made prior to 1941 indicated that injuries caused by the vegetable weevil to tobacco plant beds and to newly set plants were confined to the feeding of the larvae. The first instance of the adult attacking tobacco in the field was observed last April, when large numbers were found destroying the outer rows of two newly set shade-grown crops. (F. S. Chamberlin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

Larvae of the vegetable weevil were observed feeding on tobacco plants in plant beds in Florence County, S. C., on April 10, about 1 week later than in 1940. The larvae were also observed feeding on plant-bed plants near Mullins, in Marion County, S. C., during April, which indicates that the pest may be expected in other tobacco-producing areas of the State. (Norman Allen, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

TOBACCO FLEA BEETLE.--At Oxford, N. C., in grassland bordering a former tobacco field, in the edge of woods, and around old tobacco stalks in a tobacco field, there was a survival of from 18.5 to 42.75 percent of tobacco flea beetles in the hibernation cages. This is approximately the same percentage of survival as noted during the 2 preceding years. Approximately 100 plant beds, located in the various Tobacco Belts of North Carolina, were examined. The usual method of taking 10 $\frac{1}{4}$ -square-foot samples in each bed was followed. The average flea beetle infestation per square foot ranged from 0.32 percent in the Middle Belt to 4.94 percent in the Eastern North Carolina Belt. The data from the Border and Eastern Belts were only slightly greater than for the 1940 season, but those from the Middle and Old Belts were slightly more than 50 percent under the 1940 data. Except in a few isolated, early planted fields, flea beetle infestations were unusually light up to the middle of July, when they were approximately the same as during the same period in 1940. Harvest in the experimental plots started July 18. A protracted period of drought during April, May, and June is considered to have been responsible for the low initial populations in the fields. (C. F. Stahl, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

Cage studies of the tobacco flea beetle at Florence, S. C., for the 1940-- season showed that emergence of the overwintered flea beetles began at least as

early as February 19 and continued through May 12. The average survival for 36 hibernation cages was 9.91 percent. The peak of emergence was between April 1 and 15 and the greatest injury to plant-bed plants took place between April 10 and 20, during a period of abnormally hot weather. Injury to plant-bed plants was unusual, because the type of injury was typical of that caused to field plants when the beetles occur in outbreak numbers. More growers were concerned about flea beetle control in plant beds than during any similar period in the last 5 years. Some injury was inflicted to newly set plants but this was not given as much attention by growers as was injury to plant-bed plants. The beetles did not occur in outbreak numbers on field plants, although some fields were severely injured. This was especially true of late tobacco. (Norman Allen, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

The tobacco flea beetle was more abundant during 1941 in the Florida-Georgia tobacco district than in the last two seasons and required a larger number of insecticidal applications for commercial control. (F. S. Chamberlin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

POTATO FLEA BEETLE.--The unseasonably early warm weather in the Connecticut River Valley caused tobacco to be set early, before the appearance of potatoes, and the newly set plants were heavily attacked by the potato flea beetle (*Epitrix cucumeris* (Harr.)). Dusting with power dusters was, as usual, widely practiced by growers of shade tobacco. Later storms caused a diminution of the population and this did not regain its normal abundance until shortly before harvest, too late for thorough applications of dust. Border dusting, however, was effective in preventing the inward spread of the beetle in most cases and damage was, on the whole, less than normal on the shade-grown crop. On sun-grown tobacco damage was about normal in extent but was less severe in intensity than usual. (A. W. Morrill, Jr., Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BOLL WEEVIL.--The trend toward increased boll weevil damage, which started in the central part of the Cotton Belt in 1940, continued upward in 1941 and extended over most of the weevil-infested area. An abundance of food until late in the season caused above-average numbers of well-fed weevils to enter hibernation in the fall of 1940. This was followed by a mild winter and a high percentage of survival. Conditions were favorable for weevil development and the damage was greater than in any year since 1932 in all States except Virginia, North Carolina, and Tennessee.

The emergence from hibernation cages in 1941, as compared with emergence in 1940, was as follows: Florence, S. C., 9.8 and 0.08 percent; McIntosh, Fla., 17.6 and 11 percent; Tallulah, La., 10.4 and 0.01 percent; Waco, Tex., 14.8 and 0.09 percent. In the spring examinations of woods trash 1,960 live weevils per acre were found at Florence, in comparison with 176 weevils per acre in 1940; at Tallulah, La., 920 weevils per acre in the 1941 examinations and 190 weevils in 1940. Another very reliable index of abundance of overwintered weevils is the collection of weevils from trap plots of cotton. From a 1/5-acre trap plot at Florence, 1,115 weevils were collected in 1941, as compared with only 21 in 1940. Emergence from hibernation was also delayed by early drought in the Southeast, and a larger proportion of the weevils than usual emerged after squares were available for food and conditions favorable.

for multiplication. Rains in areas west of the Mississippi River delayed planting and fruiting of cotton and made conditions extremely favorable for a rapid build-up and a sharp upturn in damage to the 1940 crop.

Another factor that contributed to the increase in damage was the shortage of calcium arsenate and dusting machinery during the critical period for control. The shortage was particularly severe in States east of the Mississippi that had not been dusted extensively in recent years and did not have dusting machines or insecticides on hand. At Florence, S. C., the average increased yields from plots dusted with calcium arsenate was 413 pounds of seed cotton per acre, or 105 percent; at Tallulah, La., 455 pounds, or 46 percent; at Waco, Tex., 459 pounds, or 85 percent. The weevil damage in 1941 was greater than in 1940 in every State and for the Cotton Belt as a whole about equal to the damage caused in 1932.

The numbers of weevils entering hibernation in the fall of 1941 were somewhat spotted but were probably smaller on the average than in 1940. In some sections of the Southeast very little food was available late in the season because of lack of fruiting and fall destruction of cotton stalks. In the middle section of the belt defoliation by leaf worms and prolonged dry weather forced weevils into hibernation early in the season. In sections of Texas protection from leaf worm by arsenicals and continued rains permitted cotton to fruit until late and large numbers of weevils to go into hibernation quarters. (U. C. Loftin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

COTTON LEAF WORM.—The first reported occurrence of the cotton leaf worm was a nearly full-grown larva, collected in the lower Rio Grande Valley of Mexico, 25 miles southwest of Matamoros, Tamaulipas, on May 9. Larvae were found on June 6 about 225 miles to the north in Calhoun County, Tex., and by the first of July a few fields were being defoliated in the lower Rio Grande Valley of Texas. A separate infestation was reported from Marion County, Fla., on July 12. During the last week in July leaf worms were reported as rather generally distributed throughout southern and south-central Texas and practically all of Louisiana, and as present in the Presidio Valley of west Texas and in northern Mississippi. The appearance of the leafworms in Mississippi was nearly 4 weeks earlier than in 1940.

By the middle of August reports were received of infestations in western Tennessee, the Pecos Valley of Texas and New Mexico, and the Santa Cruz Valley of Arizona. The infestation by this time was general in most of Texas and the southern two-thirds of Oklahoma, and was abundant enough to cause damage in Missouri and Arkansas, and serious defoliation in southern and central Texas.

The infestation in northern Florida remained light and spread slowly. Light infestations that caused local damage were reported from Georgia, South Carolina, North Carolina, and Virginia during September. Moths were reported damaging fruit in Missouri between September 20 and 25, strawberries in Nebraska on September 24, and in Minnesota on October 2. Very heavy flights of moths were reported in Illinois, Massachusetts, and Rhode Island during the first week of October.

The cotton leaf worm caused more damage in 1941 than for several years. Considerable quantities of arsenicals were used for control in Texas, Louisi-

ana, Mississippi, Arkansas, and Arizona, but only local damage was caused in the eastern Seaboard States. (U. C. Loftin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BOLLWORM.--Bollworm infestations were also very generally distributed and probably caused more damage than in any year since 1938. The first moth emerged from a hibernation cage at Waco, Tex., on April 25. Emergence was completed by the end of May, with 22-percent survival. Bollworm was reported more abundant than usual on corn throughout the United States and resulted in a heavy migration of moths to cotton when corn matured. During August severe damage to cotton was reported from the greater part of Texas, Louisiana, and Oklahoma and on sea-island cotton in Florida. Bollworm damage was apparently associated with aphid infestations and in some cases the bollworms destroyed much of the late crop that had been protected from boll weevils. (U. C. Loftin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

PERIODICAL CICADA.--Brood XV of the periodical cicada was set up on a few scattered records along the Atlantic seaboard, supposed to have been retarded colonies of Brood XIV. The principal colonies were in Dutchess and Saratoga Counties, N. Y. This year the only confirmed record was Dutchess County, N. Y. the following observation being made by A. T. Williams: "The periodical cicada has been observed generally throughout the Red Hook, Rock City, and Tivoli area of Dutchess County, and its noise has been heard as far south as Manchester Bridge, just east of Poughkeepsie."

A. M. Woodside reported a few individuals from Staunton, Augusta County; Greenwood, Albemarle County; and Afton, Nelson County, Virginia. These are the first records of the brood in Virginia. They also must be retarded individuals of Brood XIV, as they occur in the area covered by this brood.

L. Hasenan made the following report: "On May 16, 1941, a single specimen of the periodical cicada was picked up on the street in Columbia, Mo. This is probably merely a stray specimen, although a year ago specimens almost ready to emerge were dug up." The Insect Pest Survey is not able to place this record with any degree of accuracy. It may be accelerated individuals of Brood XVI, which is a doubtful brood, consisting of one colony each in Iowa, Nebraska, and Arkansas. (G. Myers, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SPRUCE BUDWORM.--Although there was no noticeable budworm feeding in jack pine stands on the Chippewa National Forest, areas to the south and west were seriously defoliated. Feeding was also heavy in jack pine stands on the Superior National Forest, in Minnesota, and on the Huron National Forest, in Michigan. White pines and red pines in the understory were almost completely stripped of their foliage.

The spruce-fir form of the budworm caused noticeable defoliation of these species in stands in and adjacent to the Superior National Forest. (H. J. MacAloney, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SPRUCE APHID.--For the first time in several years, heavy defoliation of Sitka spruce by Aphis abietina Walk. occurred along the Oregon and Washington coast during 1941. Many intermediate and suppressed trees were completely

defoliated and killed. Most of the larger trees showed defoliation only in the lower crowns. Some ornamental spruce in the Puget Sound area were severely damaged. (F. P. Keen, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SMALLER EUROPEAN ELM BARK BEETLE.—New records showing the presence of the smaller European elm bark beetle show increases in the distribution range over those cumulative to the end of 1940. Most of the records are peripheral extensions, although some records, notably those in New York State, are outstanding additions to the known beetle-infested regions. Recent collections from areas in New York State include areas in Broome and Chenango Counties affected by the Dutch elm disease.

Indianapolis, Ind., hitherto not known to have been infested, after many examinations and considerable efforts to trap these beetles had failed to indicate their presence, was found to have a few colonies of the species in one piece of elm material and is therefore in the present distribution range.

Harford County, Md., north of Baltimore, was found to have infestations. A heavy infestation was also found in Kent County, Md., on the Eastern Shore.

Expansions in the known distribution range in northern Virginia, West Virginia, and other States in the Ohio River Valley show not unexpected marginal increases in this region. (C. W. Collins, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

The smaller European elm bark beetle is becoming more prevalent in the watershed of the Ohio River, where the phloem necrosis disease of elm is active. The killing of elms by this virus disease furnishes large amounts of breeding material suitable for Scolytus. This results in a rapid increase in the numbers of beetles. Columbus, Ohio, offers an excellent example. The insect was first recorded in Columbus in 1939 in one section of the city. At present most of the trees killed by phloem necrosis in all sections of the city are very heavily infested. Other disease areas in Ohio and adjoining States present a similar situation. This condition presents a serious situation in respect to the spread of the Dutch elm disease already found in several localities in Ohio. (D. E. Parker, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

MOUNTAIN PINE BEETLE.—Surveys conducted during the past season show that, although infestations of the mountain pine beetle (Dendroctonus monticolae Hopk.) are present in all white pine stands in the northern Rockies, no devastating epidemics exist at this time. Potentially dangerous infestations are present in the Coeur d'Alene, Kaniksu, and Clearwater National Forests. The annual loss of white pine resulting from the attacks of this destructive forest enemy have averaged approximately 90,000,000 board feet, or nearly one-fourth of the volume cut for lumber. (J. C. Evenden, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

A flare-up of the mountain pine beetle in the white pine stands of the Washington Cascades was evident this year. Commercially, white pine is not a valuable species in this area; however, it is of considerable aesthetic value, especially in Mount Rainier National Park, where a pine-beetle-control program has been in effect many years. (R. L. Furniss, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

WESTERN PINE BEETLE.--In Oregon and Washington the western pine beetle (Dendroctonus brevicomis Lec.) continues to be the primary agent of insect-caused depletion of ponderosa pine. However, the situation in 1941 was markedly improved over that of the last few years. Heavy infestations were very much localized, rather than general, in the two States and the trend of the losses was downward from those of 1940. Except for the Warm Springs Indian Reservation, where a small maintenance-control project in connection with a C. C. C. camp was again undertaken, there were no areas demanding direct control measures. (J. M. Whiteside, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SOUTHERN PINE BEETLE.--In 1940 this insect continued to be destructive and killed considerable pine, principally shortleaf, Virginia, and pitch, in the mountains of North Carolina and Tennessee, particularly in the Pisgah National Forest and in the Great Smoky Mountains National Park. Only a few small kills were observed in the mountains and in the Piedmont of the Carolinas in 1941, thus indicating a marked decrease in bark-beetle populations. (C. H. Hoffman, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BLACK HILLS BEETLE.--Infestation by the Black Hills beetle (Dendroctonus ponderosae Hopk.) continued at a generally low ebb in the central and southern Rocky Mountain region with the exception of northern Utah. On the Fowler National Forest intensive control work conducted during the winter of 1940-41 cleaned up the infestation on all except one small area that had to be left untreated because the severe winter delayed spring treating. On the Wasatch National Forest in northern Utah, approximately 18,000 infested lodgepole pines were cut during the winter of 1940-41. This work resulted in a substantial reduction on the treated areas. The fall survey showed approximately 41,000 infested lodgepole pines on the Wasatch and 7,500 on the adjoining Ashley National Forest. Serious infestation on the latter forest was evident this year for the first time in recent years. Large control projects are now being conducted against both the Ashley and the Wasatch infestations. (R. L. Furniss, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BARK BEETLES.--Recent surveys have shown that in the general total the volume of timber killed by bark beetles in California declined measurably during 1941. However, this trend does not apply to all species of beetles nor to all areas. The largest reduction of timber losses came in ponderosa pine as a result of decline in western pine beetle populations. This condition occurred for the most part on timber on the poorer sites where losses have been heavy in recent years. Areas where losses 5 years ago ran as high as 300 board feet per acre show losses for 1941 of less than 50 board feet per acre; however, in some of the better sites, where losses have been negligible in recent years, a spectacular grouping of western pine beetle attacks occurred in 1941. Most of this occurred in widely isolated groups of 15 to 25 trees and did not result in heavy losses.

Contrary to this trend, the Jeffrey pine beetle, which is responsible for severe losses in Jeffrey pine in northeastern California, continued the momentum of its recent infestations. Certain areas in the Plumas National Forest recorded 1941 losses of 300 board feet per acre. The mountain pine beetle, attacking sugar pine on the better sites, showed in general a decline similar to that of the western pine beetle. Various reasons have been ascribed as the cause of this decline. One explanation is the period of improved precipitation

and tree growth preceding the 1941 season. Another is the shortening of the period of seasonal activity in 1941, owing to a very late cold spring and abnormally low temperatures during the summer. Because of these weather conditions the western pine beetle failed to complete its normal number of seasonal generations. At the higher elevations, where the mountain pine beetle produces normally one complete seasonal generation, the broods failed to emerge during the summer and fall of 1941 and carried through into the winter period. This condition also applied to the Jeffrey pine beetle in the higher elevations, but general momentum of the epidemic was such that there was no marked decrease in timber losses.

Other forest insects in this region were somewhat erratic in behavior during the season. One of the more striking events of 1941 was the appearance of extensive killing of natural reproduction in burns resulting from an epidemic of a weevil, Cylindrocopturus eatoni Buch. (J. M. Miller, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

LARCH SAWFLY.--The larch sawfly was reported first from the Flathead National Forest, near the Canadian border, in 1933. It is believed that prior to that time the insect was recorded in western Canada to the north of the Flathead Forest. Since its discovery throughout the northern Rocky Mountains it has spread to the south and west, until at this time there are few larch stands in Idaho and Montana that have escaped defoliation. In some areas the injury has been severe, while in others the insect population has not developed to destructive numbers. (J. C. Evenden, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

A SAWFLY.--Gilpinia frutetorum F. seems to be well distributed throughout New York and the southern half of New England, having been found in many of the older plantations of red and Scotch pine through those areas. Little change has been noted since 1940 in the status of infestations under observation.

Heavy feeding occurred late in the season in one red pine plantation in Southington, Conn. Based on laboratory rearings and dissections of cocoons collected in this infestation, there was an adult emergence between July 1 and September 1, 1941, of about 47 percent, and about 17.5 percent have remained in diapause for hibernation through the second winter.

Microplectron fuscipennis Zett., a cocoon parasite which was imported from Europe and colonized in tremendous numbers throughout the spruce sawfly infested areas in this country and in Canada, has become established in many of the sawfly infestations, particularly in Connecticut. (R. C. Brown, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

GYPSY MOTH.--The hatch of the egg clusters of the gypsy moth in 1941 was variable, owing to abnormal weather conditions. Many of the egg clusters deposited late in the summer and early in the fall of 1940, and some during the first part of October, were subjected to freezing temperatures before embryological development was complete; hence a considerable mortality resulted. Egg clusters that were fully developed before the early cold in the fall of 1940 showed a high percentage of hatch in the spring of 1941. Hatching was 10 to 12 days earlier than normal, and late spring larval mortality occurred in many localities.

In Maine there was a considerable decrease in defoliation during 1941 over that recorded in 1940. In New Hampshire there was almost a 50-percent decrease in the State, as a whole, as compared with the defoliation recorded in 1940. A greater part of the heavy defoliation occurred in the Lake Winnepesaukee section of the State. In Vermont there was a substantial increase over that recorded in 1940. In Massachusetts there was more than a 50-percent increase in defoliation, as compared with that recorded in 1940. In Barnstable County there was a substantial decrease in the number of acres showing defoliation. In Norfolk, Middlesex, and Worcester Counties there was a considerable increase. A moderate increase was noted in Essex, Franklin, Hampshire, and Plymouth Counties, a slight increase in Dukes, Bristol, and Hampden Counties, and no defoliation was noted in Berkshire, Nantucket, and Suffolk Counties. In Rhode Island there was considerable increase in defoliation over that recorded in 1940. In Connecticut no noticeable defoliation was recorded during 1941. (A. F. Burgess, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BROWN-TAIL MOTH.--During the summer of 1941 there were several reports of defoliation by this insect. In southeastern Maine there were a number of towns in which heavy to complete defoliation was noted. Trees affected were apple, pear, cherry, oak, and elm. In some localities several acres of woodland were defoliated. In the south-central and southeastern sections of New Hampshire many apple and oak trees were completely defoliated, and the infestation was increasing in practically all sections. In northeastern Massachusetts, especially in Essex and Middlesex Counties, complete defoliation by the brown-tail moth in many orchards was noted. Reports from Maine, New Hampshire, and Massachusetts show that the total number of brown-tail moth webs cut by State or local authorities during the winter of 1940-41 was considerably less in Maine, but more in New Hampshire and Massachusetts. In Maine the number decreased from 1,469,000 in 1939-40 to 252,598 in 1940-41. In New Hampshire the number cut increased from 515,000 in 1939-40 to 702,286 in 1940-41. In Massachusetts the number of webs destroyed increased slightly, from 254,000 in 1939-40 to 260,797 in 1940-41. (A. F. Burgess, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SATIN MOTH.--Defoliation by the satin moth in New England increased somewhat over that recorded in 1940. In Maine, New Hampshire, and Vermont no noticeable defoliation was noted. In Massachusetts a few poplar trees in the Cape section of the State were defoliated, while in the northeastern part of the State several trees were partly defoliated in a number of localities. No defoliation was reported from Rhode Island or Connecticut. (A. F. Burgess, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SCREWORM.--As indicated by status traps, overwintering of Cochliomyia americana C. & P. was slightly farther north and west of normal on the western Balcones Escarpment, in Texas, and population carry-over was about twice the normal in this area. The development of the spring population was retarded by an abnormally cool March, but developed very rapidly to the highest population recorded since 1936 (date status was begun). An unexpected decline was recorded the latter half of June. The usual July and August decline was not so marked as normal. The fall build-up was far below normal.

The population of C. americana on the Eastern Escarpment has been low all

year to November and December, and is now normal or slightly above. For the first time this area has as many C. americana as the Western Escarpment in these months. The fly did not overwinter on the Eastern Escarpment.

C. americana did not overwinter on the Edwards Plateau and north and west of it. It was reinfested slightly later than normal, but the infestation built up rapidly during May, and June was nearly normal. The July-October population was approximately 50 percent of normal and the November-December population was normal, but very low, and the fly is still present at the end of the year.

The Rio Grande Plain had the highest population of C. americana recorded for the period January-June. The population decreased rapidly to practically none in the fall, and is practically none, or normal, at the end of the year.

The population on the Gulf coast has been low through the entire year, except for a few isolated places near Houston and westward. Apparently only the western part of east Texas became reinfested this year early in May, and this infestation never built up to any considerable extent. Louisiana has not been indicated as infested during the year.

The southeastern infestation was confined to a very small population in central and southern Florida at the beginning of the year, developed a considerable number of cases in Georgia and Alabama during the year, and is practically nothing at the end of the year, as has been indicated by reports. Northwestern Mississippi was infested by a shipment of livestock from Texas early in June and by fall the infestation had spread over several counties into southern Tennessee and a considerable number of livestock were reported as infested in the same localities.

Reports indicate several established infestations of varying degrees of intensity in the Northeastern States by introduction in infested animals. The most extensive of these was centered in southwestern Indiana, southern Illinois, and northern Kentucky.

Reports indicate that northern Texas, Oklahoma, and south-central Kansas were naturally reinfested slightly later than normal, and some rather severe infestations developed in parts of Oklahoma. No reports have been received from others of these States.

Reports indicate New Mexico to have been reinfested on both the west and east early in the season from Arizona and Texas, and infestations became rather severe in local areas, especially about Roswell and Rodeo. Reports and surveys indicate Arizona to have had an unusually severe outbreak during the entire year, and in the Salt and Gila River Valleys infestation was severe until the middle of December.

Reports indicate that C. americana did not overwinter in north San Joaquin or Sacramento Valleys of California. Infestations are indicated light to normal in southern California during the entire year. The first infestation of C. americana ever recorded in Montana was reported, but development of the infestation appears to have been practically nil. A report indicates that C. americana probably infested some animals in southern Utah in August. (R. C. Farman, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

CATTLE GRUBS.--The abundance of the common cattle grub in Texas during 1941 was approximately normal, as compared with other seasons. In the vicinity of San Angelo, Tex., grubs appeared in the backs of animals as early as October 5. In Baylor County grubs were found up in animals on October 25. Reports from the northern Panhandle area indicate that the appearance of grubs in the backs of animals was approximately 2 weeks later than in 1940. In eastern and southeastern Texas the season was apparently somewhat later than usual. (E. W. Laake, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

STABLEFLY.--The first brood of flies emerged from grass deposits about the first of August along Santa Rosa Sound, and there was a sufficient number of flies to serve as parent stock for grass deposits throughout the area. By August 30 the grass deposits along inner bays and sounds showed tremendous numbers of eggs and in the older deposits other stages could be found. At this time the flies averaged from 15 to 25 per animal, and as many as 40 to 50 were observed on man in the vicinity of Tyndall Field. Spray work was undertaken on August 27 and was continued until October 20. During this time the general average for dog flies throughout the control area was less than 2 per animal, while in untreated areas from 350 to 500 flies were observed on cattle.

As a result of a hurricane on October 7, tremendous quantities of marine grasses were deposited high above the normal tide-water marks, which became heavily infested and resulted in two outbreaks. From Carrabelle, Fla., eastward to Saint Marks, cattle averaged 380, pigs 45, and man 60 flies. The second period of high populations was observed between October 21 and 24, when cattle averaged 180, dogs 20, and man 15 flies. The flies breeding in the unusually heavy grass deposits were dispersed by winds so that the population of flies in the control area was increased to as much as 130 for cattle, 15 for man, and 18 for dogs in the vicinity of Port Saint Joe. The occurrence of a hurricane at this particular time emphasizes the high populations of flies that may be expected from tropical disturbances and clearly indicates the need for control of breeding places when such storms occur. In November flies began to emerge from peanut litter left in the fields after the peanuts were harvested, and the emergence continued throughout December. The mild weather during this season of the year permitted such a large emergence during the early part of the winter that the carry-over of immature stages may be smaller than that of last year. Three diseases occurred in mild proportions in northwestern Florida which were somewhat correlated with the occurrence of dog flies. Poliomyelitis was most prevalent in the vicinity of Pensacola, where no control work was undertaken for the dog fly; sporadic outbreaks of hog cholera occurred at different places at inland locations; and encephalomyelitis of horses was present along the salt creeks of northwestern Florida from early in August to the middle of December. (W. E. Dove and S. W. Simmons.)

SALT-MARSH MOSQUITOES.--At Panama City, Fla., and other locations along the coast in northwestern Florida two species of salt-marsh mosquitoes were abundant during the year. *Aedes taeniorhynchus* Wied. appeared in large numbers during the latter part of June immediately after heavy rainfalls were received, and this species continued to be a pest until the early part of November. Residents of the area cannot remember when mosquitoes were as annoying as they were during this period. During the latter part of August *A. sollicitans* Walk. was present in large numbers about salt marshes and was somewhat of a pest to Tyndall Field and the residential sections of Panama City. This species was also observed as far as 45 miles from the coast in the vicinity of cases of encephalomyelitis. (W. E. Dove, Bureau of Entomology and Plant Quarantine, U. S. D.)

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(Owing to the shortage of paper, the list of common names is being omitted. Previous indexes may be used for reference to common names. For list of the names approved by the American Association of Entomologists see Jour. Econ. Ent. 35: 1,83-101, February 1942.)

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